

AMERICA
AT SCHOOL
AND
AT WORK

H. B. GRAY

U. C. L. A.
EDUC. DEPT,



THE LIBRARY
OF
THE UNIVERSITY
OF CALIFORNIA
LOS ANGELES



Digitized by the Internet Archive
in 2007 with funding from
• Microsoft Corporation

AMERICA AT SCHOOL AND AT WORK

By the same Author.

THE PUBLIC
SCHOOLS
AND THE
EMPIRE

ECLIPSE
OR
EMPIRE?

(Jointly with
SAMUEL TURNER)

AMERICA AT SCHOOL AND AT WORK

By
HERBERT BRANSTON GRAY
D.D. Oxon.

MEMBER OF THE MOSELY EDUCATIONAL COMMISSION TO U.S.A. 1903;
PRESIDENT OF THE EDUCATIONAL SCIENCE SECTION OF THE BRITISH
ASSOCIATION (CANADA) 1909; (AUSTRALIA) 1914; SECRETARY TO THE
ROYAL COMMISSION ON TAXATION, BRITISH COLUMBIA, 1911



London
NISBET & CO. LTD.
22 BERNERS STREET W.1

U. C. L. A.
EDUC. DEPT



First Published in 1918

U. C. L. A.
EDUC. DEPT.

Education
Library

LA
210
G79a

TO MY MANY FRIENDS IN
THE GREAT REPUBLIC OF THE UNITED STATES
I DEDICATE THIS BOOK
IN TOKEN OF
THEIR UNFAILING HELP AND
GENEROUS HOSPITALITY

923340

INTRODUCTION

THE following chapters were written during the spring and summer of 1917, in the course of an educational mission of six months undertaken by the author at the beginning of that year.

They are, therefore, the result of impressions taken 'red hot' at the time of his visit, and not the calculated criticisms which might be expected after the interval of a year.

The delay in publication has arisen from causes which need not here be dwelt upon: but it may perhaps be mentioned that certain Government Departments in the autumn of 1917 kindly expressed an interest in the subject-matter with which these chapters deal, and a desire to receive a recent record of the educational and industrial movements in the United States during the past few years.

The visit in 1917 was by no means my first

CONTENTS

CHAPTER I

EDUCATIONAL MOVEMENTS

PAGE

Educational unrest in England—the dangers of compromise—effect of the war on American Education—comparative freedom from tradition—but Eastern States influenced by their English origin—educational movements since the war—object of the present volume—Education in America not a national but a State or Local function—the basic idea of American Education—New York and the General Education Board—struggle between the ‘Old’ and ‘New’ Learning—risks of over-endowment not to be feared in England

1

CHAPTER II

EDUCATIONAL STATISTICS

Number of pupils under instruction in U.S.A.—limits of compulsory education in various States—how affected by good and bad times—effects of wages and machinery on industry—standard minimum wage—tendency towards Federal legislation

13

CHAPTER III

EDUCATIONAL EXPENDITURE

Expenditure in U.S.A. and Great Britain contrasted—immense private benefactions—the people of U.S.A.

xiii

mainly the product of public education—national wealth due largely to this factor—standard of education higher than in Great Britain—experimentation bolder, and more free from prejudice—possible effect of the war on Great Britain in this respect . . .

19

CHAPTER IV

EDUCATION AND INDUSTRY

The Gary Foundation—Pre-vocational Courses—the Intermediate Schools—aim of Industrial Education—distinguished from Manual Training and from Technical Education—corresponding with the various stages in the student's career—different localities call for different types—supply of adequate teachers . . .

25

CHAPTER V

CHANGES IN IDEALS

Adjustment of systems of Education in U.S.A. to meet the needs of the times—the growth of specialism—calls for changes in the character of the education of the young—reforms in England aim at compromise between competing claims in subjects rather than view Education as an organic whole—the School regarded as a self-contained entity—Education the natural birthright of every child—recognition in U.S.A. of need of adjustment—the aristocratic tendency of formal school methods—the (Federal) Lincoln Acts of 1862—grants for agricultural and industrial Education—the aloofness of the (so-called) Public Schools in England from a national system of Education a danger to the future destinies of the Empire . . .

29

CONTENTS

xv

CHAPTER VI

CO-OPERATIVE MOVEMENT—I

	PAGE
Discontent with formal educational methods finds expression in works of advanced educational thinkers—the Cincinnati system explained in the University and High School stage—the 'co-ordinator'—the universal success of the scheme—subjects studied . . .	36

CHAPTER VII

CO-OPERATIVE MOVEMENT—II

In the Struyvesant High School of New York—in the Boston High Schools—in the Fitchburg School (Mass.)—the advantages and future success of the co-operative system explained	43
--	----

CHAPTER VIII

CORPORATION SCHOOLS—I

Education for employees after school age as carried on by the big firms themselves—the principles of the (Federal) Smith-Hughes Bill—the Lakeside Press of Chicago . . .	52
--	----

CHAPTER IX

CORPORATION SCHOOLS—II

Education in the Wanamaker Store—in the Filene Store of Boston—in the General Electric Company . . .	59
--	----

CHAPTER X

PRE-VOCATIONAL TRAINING

The catholicity of American Education—enhanced by the fact that it is a State and not a Federal function—	
---	--

greater elasticity in the Western States—the elementary school lags behind the needs of the age—the pre-vocational school the remedy—the Gary System in Indiana explained—its advantages and disadvantages—the Ettinger System explained—its superiority . . .	65
--	----

CHAPTER XI

CHILD LABOUR—I

Its development in Chicago—necessitated by the early legal limit of leaving school—motives for leaving school statistically considered—occupation of parents—the pre-vocational school system as an incentive for remaining at school—statistics showing age and grade of leaving school—the Vocational Bureaux and their work—statistics showing 'first situations' . . .	73
--	----

CHAPTER XII

CHILD LABOUR—II

Wages of boys and girls under 16—blind-alley occupations in U.S.A. and in England—statistics in Chicago showing number of jobs of boys between 14 and 17, and reasons for leaving jobs—the remedy for blind-alley occupations is compulsory education up to 16 . . .	82
--	----

CHAPTER XIII

VOCATIONAL SCHOOLS IN ST. LOUIS

Three grades of Vocational Training—the Franklin Grammar School—the Central High School—the David Rankin Trade School	88
---	----

CONTENTS

xvii

CHAPTER XIV

SCHOOLS IN DENVER

	PAGE
The Manual Training High School—the Trade School of the North Side—the Opportunity School considered as an Educational Refuge, its miscellaneous and catholic character	94

CHAPTER XV

CALIFORNIAN SCHOOLS

Los Angeles—its unique conditions—the High School system at its best—the Academic, the Polytechnic, the Manual Arts, the Jefferson and Gardena Schools described—the Intermediate Schools of Los Angeles . .	102
--	-----

CHAPTER XVI

CALIFORNIAN UNIVERSITIES

The Technical High School at Oakland—the Leland-Stanford University at Palo Alto—the University of California at Berkeley	112
---	-----

CHAPTER XVII

AGRICULTURAL EDUCATION

The Morrill Act of 1862 explained—the Agricultural Colleges in the various States—the need and development of scientific agriculture in U.S.A.—the 'movable' Agricultural School—Demonstration work—Agricultural Magazines—Farmers' Institutes—Vocational work in districts—Correspondence and Extension Lecturers—the Smith-Lever Acts, 1914	119
---	-----

xviii AMERICA AT SCHOOL AND AT WORK

CHAPTER XVIII

CORRESPONDENCE SCHOOLS

	PAGE
Their design in filling educational gaps—special reasons for their success in U.S.A.—their confessed drawbacks—the wide field of instruction covered	126

CHAPTER XIX

WELFARE AND EDUCATION—I

School life not regarded as an end of responsibility—the placement bureau in the Washington Irving School in New York—difference of status of a Headmaster in England and U.S.A. gives opportunity to the latter for superintending after-school welfare work—philanthropy in U.S.A.—the activities of the Y.M.C.A. .	131
---	-----

CHAPTER XX

WELFARE AND EDUCATION—II

Correspondence and Extension Study arranged by the Universities and Colleges in cultural, historical, agricultural, engineering and commercial subjects—Popular Lectures—Local Lectures—Bulletins—Civil and Social Bureaux—utilisation of School Houses—work done for the education of the people by the Clark University at Worcester, the University of Cincinnati and the University of Wisconsin—the assimilation of divergent nationalities the pressing problem in U.S.A. . . .	138
---	-----

CONTENTS

xix

CHAPTER XXI

REWARDS OF TEACHING

PAGE

The poverty of payment to teachers in 1903 compared with the munificence shown in material structure and equipment—the blight of ‘politics’—‘Graft’ in U.S.A. compared with ‘vested interests’ in Great Britain—Salaries of Superintendents of Education—of Principals and Teachers in High Schools—of Principals and Teachers in Elementary Schools—of Presidents, Deans, and Professors in Universities—the predominance of women teachers a bane to education—solidarity of position and better pay of all assistant teachers the remedy	146
---	-----

CHAPTER XXII

SCIENCE AND MANUFACTURE—I

The pre-eminence of the manufacturer in U.S.A. in mechanical processes—its causes—the art of money-making sometimes overshadows manufacturing skill—the abuse of advertisement—the squandering of resources in U.S.A.—the application of scientific skill to industry a new discovery—man a creator—‘pure’ science and ‘applied’ science—the effect of the war on American scientific education and industry . . .	155
--	-----

CHAPTER XXIII

SCIENCE AND MANUFACTURE—II

No co-ordinating relations between Factories and Universities in U.S.A.—suspicion and jealousy prevents the free employment of research chemists—the un-	
--	--

xx AMERICA AT SCHOOL AND AT WORK

PAGE

practical character of some scientific institutions— Professor Duncan's seven points—failure to grasp the value of 'ideas'—the recent successful co-ordinating work of the University of Wisconsin and other Universities	161
---	-----

CHAPTER XXIV

SCIENCE AND MANUFACTURE—III

The Industrial Fellowship scheme at the Universities of Kansas and Pittsburg—the elimination of waste— the research students' wide scope—the effect of the war on the wider utilisation of scientific knowledge in U.S.A.	167
---	-----

CHAPTER I

EDUCATIONAL MOVEMENTS

THE startling inefficiency and shortcomings in many spheres of English life, which have been laid bare by the events of the past four years, have perhaps nowhere been taken to heart more seriously than among educationists. A rapidly increasing number of those engaged, or interested, in teaching have been induced to accord at least a respectful hearing to those thinkers who have pointed out that the gradual displacement of British supremacy in nearly all the fields of industrial and commercial activity during the past forty years has been mainly due to the chaotic and unscientific character of the training received by the young people of England of all classes and conditions.

The danger involved in this restless state of the educational heart at the present time lies less in a wholesale prejudice against changes as such than in a willingness to accept reforms which are merely superficial and not organic. The British genius, even in time of grave national crisis, shows an in-

2 AMERICA AT SCHOOL AND AT WORK

veterate tendency to compromise rather than to revolution, and in this particular case of education it leans chiefly to a *rapprochement* between the contending claims of the classical and scientific schools of thought. The annual January meetings of the various educational bodies have not on the whole tended to dissipate this fear. 'Buttress by balance' seems to have dominated the counsels of prominent educationists. The conflicting claims of literary and scientific studies have been the main topic of discussion, rather than a complete revolution of the educational programme, which would bring all classes of the community into one great national scheme.

This chapter was begun before the introduction of Mr. Fisher's Bill. That magnificent and far-reaching measure has not, however, affected the temper of mind still observable in the higher ranks of the profession.

It would be interesting and fruitful, therefore, to note the educational movements that are at present taking place in the United States—a country so closely allied to us in blood and congenital traits.

Let it be premised that it would be a mistake to suppose that three thousand miles of water have left America untouched by the educational problems provoked by war. On the contrary, even during the two years and a half before she joined the cause of

the Allies, her views on the best training for life work have undergone profound changes in most of the progressive States of the Union.

But there are essential points of difference between the two in their respective outlook on life. Tradition is such an integral factor in the Old World that it is difficult to realise how small a part it plays in the New. The people of the United States are quick to respond to every play of intellectual and moral movement. They are the most sentimental of all peoples in the best sense of that misused word. American sympathy, for instance, with noisy but insignificant exceptions, was passionately in accord with the National ideals which the cause of the Allies represents. So far from the thoughtful American assuming an attitude of superiority in standing aloof, he was continually humiliated by the fear lest the purging effect of the contest on the struggling nations should have the effect of leaving America behind in the pursuit of national ideals.

But until quite lately, in the field of educational reform, this spirit of progress has had to encounter strong opposition. The roots of American education were laid three hundred years ago ; they were transplanted from the Eastern Hemisphere, and were until 1905-1913 fixed firmly in the soil, specially in the Eastern States. During the last few years however, before the war, and still more in conse-

4 AMERICA AT SCHOOL AND AT WORK

quence of it, with all that logical quality, which perhaps they have borrowed from French rather than from English genius, Educators in the United States have been diving deep down into the causes and roots of things. An era of experimentation on a characteristically bold basis has set in, and has been conducted on an immense scale during the last five or six years, not only in the Eastern States, but more especially in those of the Middle West and the extreme West. It may safely be asserted that the educational standard in the year 1918 in the U.S.A. is further removed from that of 1903 (the year of the Mosely Commission), than is the educational standard of the upper classes in England to-day, from that which prevailed in 1861 (the date of the birth of the Clarendon Commission). As for the education of our poorer classes up to the date of Mr. Fisher's Bill, it was far nearer in type to that which existed prior to 1870, than are the Primary Schools of America in 1918 to those that existed in 1908 (the year of the Forster Legislation). Nor is there any sign in America that the educational tide is likely to ebb; on the contrary, it seems more probable that it will continue in fuller flood.

Educational ideas and movements on the other side of the Atlantic would appear therefore of exceptional interest and importance to English educationists at the present time, when our country has

been called to put her own educational house in order—and that quickly, while men's hearts are malleable. Otherwise it may be asserted, without fear of contradiction, she will find herself eclipsed, industrially and commercially, by other and more alert nations within a single generation, and her empire—gone or disintegrated, whatever be the issue of the present World-War.

It is the object of this little book, therefore, to report what is happening educationally in America, in the different States of the vast American Federation, which is confessedly the most progressive industrial and commercial nation in the world. Hope may confidently be entertained that Great Britain may learn therefrom something for imitation, something perhaps for avoidance, but more still for critical study and profitable guidance.

And here it must be emphasised at the outset, that American education is not like English education—capable of being viewed as an organic whole. There is no national administrative machinery of education in America, and no national legislative authority over education in the various States. The Bureau of Education at Washington is advisory only. In the middle of the last century the Federal Government, indeed, made huge grants of land, amounting to nearly 90,000,000 acres, and huge grants of money in aid of education in the several

6 AMERICA AT SCHOOL AND AT WORK

States. And though these grants of land have for obvious reasons ceased, yet Washington has continued to exert an active benevolence in endowing American education as a whole. For instance, a law has just been passed through Congress, which will ultimately allocate \$7,000,000 for the endowment of industrial education on certain conditions being fulfilled. This centralising movement has, indeed, been looked upon somewhat suspiciously by those who are jealous of Federal encroachments on the independence of the individual States.

The main point to be insisted on, however, is that education is in America a State function, and in large cities a Local function. It is altogether impossible therefore to draw universal conclusions from an isolated inspection of the educational programmes of New York, Boston, Philadelphia, Cincinnati, Chicago, and Minneapolis. All these differ from one another, because, though all are industrial centres, yet the States of which they are the chief cities, differ largely in their needs and capacities, while the problems presented in those named differ still more profoundly from those encountered in Richmond, St. Louis, Kansas City, San Francisco, and Los Angeles, and these again differ from those presented by the agricultural communities of the South. The writer explored last year the educational conditions of these different types of States—

more than twenty in all—and he believes that the facts gleaned from such an extensive and variegated field of survey, are capable of an ordered synthesis, which may prove of service to educational reformers and future legislators at home. For though the same geographical and political conditions obviously cannot be reproduced, certain basic principles of education surely lend themselves to transplantation, and can bear fruit in another soil. What then is the basic idea underlying all the various developments and experimentations in American education? The answer is not far to seek.

America is the land of universal immigration, and New York is the widest gateway. But it is more. It is also the filter, through which the turbid stream has to pass. The chief aim, therefore, of American statesmanship, is to assimilate this mass of mankind in the briefest possible space of time, and make them first of all good American citizens. This can only be done by the agency of education, conceived and carried out in the broadest terms. The English language is the great instrument by which Education works. Therefore it has to be taught, and is taught, on scientific principles. It has to be acquired : it is not inborn.

Secondly, education can only be conveyed through the medium of various stages of the Public School system—properly so called—viz., the Elementary or

8 AMERICA AT SCHOOL AND AT WORK

Grammar School, the High School, and the Technical Schools, and finally, the College or University. Practically the vast majority of Americans, native-born and alien, Anglo-Saxon, Scandinavian, Teuton, Slavonian, are pounded together in the same educational crucible. The Private Schools answering to our (misnamed) Public Schools are a mere excrescence, and are 'counted out' in State legislation. They only appear in the College or University stage, and have no effect on the conduct of those institutions.

The net result of this catholic system of Education is that while the 'cultural' standard is lower than in England, the standard of education of American citizens as a whole, is far higher, and more universally diffused. Education is designed for the masses and not for the classes. It is the birthright of every citizen.

Another result is, that while in England the ancient Universities have hitherto 'set the clock' for the lower stages, the reverse is the case in America.

Again there are no artificial barriers, social or financial (except the desire of early money-getting), to debar the American youth of humblest origin from rising to the highest positions in the State through the agency of the school. Hence, as will hereafter in these chapters be either implied or expressed, education becomes for him his one

inalienable asset. And the great effort of one and every State is to help the youth to achieve his end. All experiments, all developments, whether in the shape of manual training, pre-vocational, vocational, technical, and trade, are planned with that one end in view. They differ in means, but the final aim is the same.

This then is the great American basic idea, to which all else is subordinated.

New York claims our first attention. Early last year there issued from the largest city of the New World, a scheme which will probably prove an epoch-making revolution in the history of American education. The General Education Board of New York is responsible for its incubation and promulgation. It announces that it will give its support to 'an experiment in the education of the youth of the country, which, if successful, will mean practically the complete modernisation of the Elementary and the Secondary School.' It proposes to establish and conduct a school under the auspices of the Teachers' College of Columbia University, where English and modern languages shall take the place of Latin and Greek, which ancient tongues will not be taught except in translations, where mathematics will be taught 'for use,' where civics, science, history, will be emphasised, where new methods of

10 AMERICA AT SCHOOL AND AT WORK

teaching all these will be tried, where 'pictorial education' will come to the front, and 'formal discipline' be sent to the wall.

This announcement might not seem to be of transcendent importance in influencing the future education of American citizens, were it not for the two-fold fact that :

- (1) the resources of the General Education Board amount, through the benefactions of John D. Rockefeller, to no less a sum than \$35,000,000 ;
- (2) the experimentation has been largely the result of two epoch-making pamphlets—one entitled *Changes needed in Secondary Education*, by Dr. Chas. Eliot, President Emeritus of Harvard University (which having been founded 300 years ago by a distinguished son of Emmanuel College, Cambridge, has been justly regarded as the home of conservative education); and the other, *A Modern School*, by Dr. Abraham Flexner of the General Education Board.

It is needless to say that this fresh departure has not been received with universal acclamation by the advocates of the 'Old Learning'—it is arraigned indeed, almost as severely as it might be by the older schoolmasters and the country clergy in England ; it is branded 'as radical and dangerous,'

and as 'A bread and butter' education. But the moral of it, for the English reformer, lies in the fact that the scheme has been launched in the educational world with that ease which might be expected of any plan backed by immense wealth, and unimpeded by the lumbering and retarding hand of a Government Department. It is instructive to compare this facility of operation with the fact that it has taken thirty years and more of fruitless effort to get under way an Act of Parliament in England, to abolish the existing composition of the Convocations of Oxford and Cambridge, and therefore the voting power of non-resident obstructionists—an obstacle which has put back the clock of educational reform throughout the land for more than a generation. For it cannot be too often repeated that the prescriptions of our two ancient universities have dominated not only our so-called public schools, but the whole secondary education of our country. It is significant, on the other hand, that this experimentation in the United States has not only set the clock to the Elementary Schools below the Secondary, but threatens to prescribe the future educational requirements of the Colleges and Universities above them.

It must indeed be conceded that there is a vast compelling force in such a sum as \$35,000,000 which has its dangerous side. It enables the donors to

12 AMERICA AT SCHOOL AND AT WORK

force upon the public the acceptance of the ideals which they advocate. Such a danger, however, need not alarm English educationists. There is no likelihood of men who have acquired great wealth in Great Britain, at least in any substantial numbers, offering their resources to educational institutions on the condition that these should discontinue (what the donors regard as) effete branches of education, and laying excessive stress on others. Nor is there any great risk, to judge from the experience of the past, of any English Government, even when taught, as this war has taught them, the transcendent importance of a truly scientific education as a national asset, over-endowing any institution or set of institutions, having scientific training as the end in view. But the magnificence of conception which America and Americans have always visualised in so disposing of their wealth, even when their standards have not been consistently high or ideal, may teach something to a nation and a government, which had up to within a generation looked upon education as a bore, and regarded its support as something to be doled out in pailfuls, and to be the particular privilege of the more prosperous classes in the country.

CHAPTER II

EDUCATIONAL STATISTICS

THIS book, as was pointed out in the Introductory Chapter, is intended to serve rather as a guide to some of the highways and byways of American Education, than to enforce any particular educational views, or to compare the methods of man-training employed in the United States with those prevailing in Great Britain.

Though, therefore, these views and comparisons may incidentally force themselves to the front here and there, my main purpose is to give a record of educational facts and statistics. It is fitting, therefore, to start with these. This short chapter will be full of them, and owes whatever value it may possess to information generously supplied to the writer by Dr. Claxton, who at a busy and anxious time in 1917 (for war had just been declared) nevertheless put himself for two whole days at my disposal.

There are 27,000,000 boys and girls of school age, *i.e.* from five to eighteen and onwards in the United States out of a population of 102,000,000 of whom

14 AMERICA AT SCHOOL AND AT WORK

23,000,000 are actually under instruction in public institutions. Of these 27 per cent. (including immigrants) proceed to the High Schools, and 10 per cent. of the whole 23,000,000 who pass through both Elementary and High Schools graduate in the latter, *i.e.* at the age of seventeen to twenty. 1,700,000 are in the High Schools (for children between thirteen to twenty) at the present time.

Education is compulsory up to the age of fourteen in all States except a few in the South. In Ohio this compulsion is carried up to sixteen for boys, and up to eighteen for girls. Education is practically compulsory also in Pennsylvania up to sixteen, owing to the strict supervision over the employment of children from fourteen to sixteen, enforced by certificates, etc., etc., which are continually being examined; while in most Middle-West and West States such strong restrictions are put on the employment of children between fourteen and sixteen, that a large proportion are found to be at school till the latter age.

In South Carolina, which is a poor State, there are 57 men of voting age (twenty-one) for every 100 children of school age, whereas in California, a rich State, there are 169 men for every 100 children at school. This implies that there are much larger families in the Southern or poorer States than in the Western or richer. On the other

hand, the wealth of California per capita being six times as great as in South Carolina, that State is much more capable of carrying on education to a later stage.

These figures open out problems connected with race-suicide. For instance, in Massachusetts, a State of great industrial and commercial prosperity, the population would actually decrease, if the leakage were not checked by immigration. This decrease is not true of the agricultural states of the Middle West.

The effect of the high wages in U.S.A. in encouraging boys and girls (and their parents) to continue or curtail their education is particularly interesting.

Hard times keep Universities and High Schools full; prosperity tempts boys (and girls) to leave school at an earlier age. It is clear, therefore, that the temptation to leave school arises not so much from the desire to help the parental purse as to secure high wages for the boys and girls themselves at an early age. There is no sign, in other words, that hard times affect the food supplies of families. This state of things is almost the converse of what takes place in Great Britain in normal times.

In what States, if any, it may be asked, do low wages prevail and what is the effect on industry and invention?

16 AMERICA AT SCHOOL AND AT WORK

And again—how do the various States in the U.S.A. undertake to answer the complaint ‘made in England’ that the extension of machinery reduces the demand for labour, etc., etc. ?

This problem has not affected the U.S.A. to any appreciable extent. Owing to the general diffusion of intelligence it was recognised early in the history of American Industry, that increase of products, however brought about, raises the standard of living. Increase of products brings about increase of consumption, and the more machinery is employed the greater the increase of product.

The general intelligent belief in these truths has been brought about in the U.S.A. very largely by the system which prevails of experts moving about from State to State and from city to city, and lecturing on economic subjects ; also by the fact that the rural school buildings are utilised as meeting places for the rural communities in the evenings for the purpose of mutual discussion and improvement.

Generally, it may be asserted that wages are adjusted to the cost of living in the various States. For instance, in the Southern States, where there is a large negro population, the wages of white labourers are largely reduced by the competition of coloured labour. On the other hand, in Michigan and Wisconsin, the wages are from 50 per cent. to 100 per

cent. higher than in South Carolina. But throughout the States no such feeling has prevailed in any period of their history as obtained in England in the early days of the introduction of machinery, and was shown in the burning of machinery by the labourers, who thought that its introduction would take the bread from their mouths.

But—and this is an important point—high wages have a tendency to provide less employment for boys and girls of school age between sixteen and eighteen, because high wages go hand in hand with increasing complexity of machinery; and complex machinery, requiring greater intelligence and steadiness, denies occupation to boys and girls under sixteen and even under eighteen. For example, in the days before the introduction of the harvester, there was plenty of opportunity for boys and girls on the land; now they are not wanted. Cotton-mill machinery, on the other hand, which is simple, and (to use an American phrase) ‘fool proof,’ and which requires mere attention, admits the employment of the young, and they are employed considerably in mill work in the Southern States.

Is there in any State a standard minimum wage for all workers? If so, what is the legal machinery enforcing it?

Here again it may be answered that there is no

18 AMERICA AT SCHOOL AND AT WORK

one and the same legal minimum wage for workers. Every State prescribes its own wage : but there is a growing tendency towards investing the Federal Government with the power to legislate on this matter. It must, however, be remembered that any movement of the Federal Government towards Inter-State legislation of all kinds is looked upon with jealousy, as arrogating authority not granted by the Constitution. Thus, the Adamson law, fixing the eight hour rule, was received with some suspicion. Nevertheless there is a tendency in every State towards fixing a legal minimum wage. For instance, the district of Columbia prescribes an eight hour day for women and children. But at present it cannot be said that legislation is active on the matter in the various States.

CHAPTER III

EDUCATIONAL EXPENDITURE

THE annual public expenditure in the United States (1916), on the maintenance and administration of schools below University standard, may be estimated at \$550,000,000, *i.e.* more than £110,000,000. This sum does not include the cost of land and buildings.

There are 700,000 teachers of all grades, the majority of whom are women.

Roughly, the population of the United States is a little more than double that of the United Kingdom—102,000,000 as against 45,000,000.

Taking this difference of population into account, it is interesting and significant to contrast this sum of £110,000,000 with that spent annually for the same purpose, by the Central and Local Authorities in Great Britain. According to Whitaker's *Almanac* (1916), the estimate of expenditure for 1915-1916 amounted to £20,956,239, less than one-fifth of that provided by the States of the American Union.

But this comparison does not exhaust the case.

20 AMERICA AT SCHOOL AND AT WORK

The amount of private benefactions in America bestowed for educational purposes is enormous, when viewed from a British standpoint. There is hardly a State where wealthy men have not founded or richly endowed Universities, Colleges and technical institutions.

The Rockefeller, the Carnegie and the Russell Sage Foundations, though perhaps the most prominent, are only three among hundreds and thousands of similar benefactions, which represent the contributions of private individuals toward the educational welfare of the community.

From the Eastern States privately endowed institutions like the Pratt Institute, John Hopkins University, to the Western seaboard which boasts the possession of the Leland Stanford University, express on a magnificent scale the universal belief among Americans of all kinds and degrees that education is a national asset. \$40,000,000, *i.e.* more than £8,000,000 has been expended by John D. Rockefeller as a free gift to a single University, *i.e.* the University of Chicago.

Compared with a stupendous sum like this, the munificence of our pious founders and benefactors fades into insignificance. And though the criticism may be made, that not all the free-will offerings of American citizens have been wisely or reproductively bestowed, yet they offer at least an

irrefragable proof that education has been, and still is regarded through the length and breadth of the land, and by all the most successful and large-hearted citizens, as the one indisputable source from which all the health and wealth of the Great Republic have sprung.

To quote from an interesting monograph on *A Dominant Purpose in Public Education*, by Dr. Albert Shields, Superintendent of Schools in Los Angeles :—

‘The great majority of our people are themselves the product of public education, and they recognise not only their own personal debt to it, but also the larger benefit which has accrued to the whole nation through its system of common schools. If we may attribute to any one single source the largest debt of our American civilisation, that debt is due to the public school system of the American people.’

And what is true of the common schools, is true to an equally large degree of the higher education as expressed in the technical institutions and University Colleges throughout the land. The natural resources of the country, stupendous as they are, could never have been exploited to the fabulous extent in which they are seen developed to-day

22 AMERICA AT SCHOOL AND AT WORK

without a corresponding development of educational power linked to the natural inventive genius of the Anglo-Saxon race. Incontrovertible evidence of this is to be found in the fact that the accumulated wealth of the United States exceeds, in normal times, the combined financial resources of the whole of the great contending Powers in the present war, *i.e.* Great Britain, France, Russia, Germany, Austria and Italy.

It is of course not asserted that this financial preponderance has been due to the superior quality of education in the Western Hemisphere. On the contrary, the standard of learning there is in many respects lower than in some European countries. There are many glaring deficiencies and much that calls for organic change—but the spirit and belief in educational processes as such is universal. There is at least a complete freedom both from prejudice and crystallisation in methods and subjects; experimentation is everywhere observable, and is attempted with a bold disregard to tradition. Spirited attempts are being renewed year after year, even month after month, to meet the diverging needs of the citizens in different parts of the Federation, by changes and modifications in the educational system of different States. It is this true spirit of enterprise which makes the study of American Education so suggestive and so in-

spiring to an educational thinker from the other side of the Atlantic.

He leaves behind him a scholastic world honey-combed with tradition, where vested interests, disguised under whatever specious names, block the path of reform, while the dead hand is everywhere, causing even venerable benefactions to become injurious, because they are still directed into channels long ago silted up, and where the governing authorities of institutions are so jealously tenacious of their privileges that they resent being asked to take action against undoubted moral laxities in their midst, though those laxities are glaring enough to all, except to those who bear oligarchical rule.

Such was the temper of mind among many educationists in Great Britain in 1914, and evidence still lingers that that temper has been only scotched during the four years of war, not killed. Witness the reception accorded to the Memorial signed by nearly 600 graduates of Oxford (including five bishops) urging the authorities of the University to take advantage of the altered conditions produced by the state of war to put a stop to the practice (*inter alia*) of selling spirits and the more potent drinks from college stores to undergraduates. 'The Vice-Chancellor and Proctors' (in their reply) 'decline to receive or discuss such a memorial.'

The problem to be faced by our Government

and people is whether Great Britain is to profit so far by the result of her experience in the war, and by the confessed futility of much that was antiquated and unscientific in the training of her youth, that she will be willing to effect an educational revolution in all stages and throughout all classes of an organic and not merely a superficial character. On the far-sightedness of those in supreme control of the nation's political destinies, and on the sweeping away alike of vested interests and of fossilised conditions, will depend the making or marring of Great Britain, not only as a future leader in the world's industries, but also as a future guardian and preserver of her world-wide Empire.

CHAPTER IV

EDUCATION AND INDUSTRY

INDUSTRIAL education is a special form or function of the system of public education in America, but it is one that bids fair in the future to play a more and more important part throughout all its stages.

The methods of the Gary Foundation, the pre-vocational courses in some of the Grammar or Grades Schools in New York and elsewhere, and the Intermediate or Junior High School system in California and some parts of the Middle West and East, are all developments of recent years, and are all pushing their way into the educational programme. Everywhere the 'College or Academic Course' is seen to be yielding ground to this new educational impetus. It may be valuable therefore to draw attention to certain principles and ideals which ought to underlie the development of this industrial training, if it is to take its place as an effective instrument for fitting men and women for their life-work of industry.

(1) It should be kept in mind that the aim of industrial education is not the multiplication of

labourers, or the cheapening of products, but the training of the best and most efficient type of wage-earning citizens.

(2) All educational schemes should be so framed as to develop the complete powers, and not merely the wage earning capacities of the student. Thus, vocational education may be unpractical, or, on the other hand, it may look toward the mere production of a human machine, without imparting any scientific knowledge of the causes for doing or not doing this or that. Finally, it must fit the student for the best employment of his leisured no less than of his labour hours.

(3) Industrial education must be distinguished from mere manual training on one hand, and from technical training on the other. Manual training has no other aim in view than the teaching of the general connection between eye and hand, without any definite 'life aim' in view. Thus it ceases to interest the prospective wage-earner after a certain period in his educational career.

Technical education, on the other hand, is a course of supplementary training, when the normal educational period is past, and when the vocation has been already chosen, and is intended to give the workman or apprentice a still greater aptitude and stimulus for his life-work. The Pratt Institute, the Corporation Schools, and of course the Technical Colleges, are instances of such post-vocational courses.

(4) These distinctions correspond with different stages in the educational career of the student, (a) the pre-vocational course being appropriate to pupils of twelve to fifteen either in the pre-vocational grade school or the intermediate school, (b) industrial education properly so called, where the aptitude has been discovered and is followed out in the technical or Manual Arts High School from the age of fifteen to eighteen or twenty, and (c) the post-vocational course which is pursued by students of eighteen or twenty onwards.

(5) The educational machinery necessary for these different types of training must obviously differ in different localities. For instance electrical engineering is the speciality in one city, boot manufacturing in another. This naturally modifies the kind of technical education given in the schools. Again, in order to be effective, some ratio must be kept between demand and supply in each community, *i.e.* it must be discovered how far the labour market in each particular trade is or is likely to be over or under-stocked.

(6) Another difficult problem to be faced in industrial education is the provision of adequate teachers. The mere academic instructor, who has had no experience of actually doing the practical work of which he is the scientific exponent, is useless. A man who has passed and successfully passed through the practical experience of a trade must

therefore be chosen, but he again may be entirely devoid of the instructional power which comes from a mind highly trained on a liberal educational basis.

(7) There are certain limitations to industrial education. Not only must there be, for economic reasons, a natural avoidance of training for such vocations, as, owing to the geographical and economic conditions of the community, can get no scope for their exercise, or where the labour market is overstocked, but there must be an avoidance also of such employments, the preparation for which is dangerous to the health or morals of the young student.

(8) It is clear from the above considerations that some broadly conceived system such as would avoid at one and the same time the employment of unsuccessful teachers, and also the training in such departments of human activity as would not fit in with the wants of that particular community, in which the student and future workman is to spend his life, is the ideal to be aimed at by the educational authorities. Some such ideal is probably to be found in the part-time labour and educational system which is known as the Cincinnati or Fitchburg plan. The consideration of this scheme is reserved for a future chapter.

CHAPTER V

CHANGE IN IDEALS

UNDOUBTEDLY the most pressing problem which confronts the civilised world of to-day is this :—how best to adjust the system of education, that is, the formal preparation for life's work, so as to ensure that it will keep pace with the stupendous changes in the conditions, needs, and demands of mankind, which have marked the opening of the twentieth century. These changes, so far from showing any sign of abatement, are likely to increase in a geometrical ratio as years go by. Already the discoveries and inventions which have swept upon the consciousness of one single generation exceed in number and complexity all that have been laboriously evolved in the process of the crowded ages. These discoveries and inventions have pointed the working powers of man in completely new directions. They have disorganised all former industrial conceptions, and almost obliterated the old industrial landmarks. The continuously increasing substitution of machinery for hand-labour has, in fact, produced a series of silent economic revolutions.

The worker in every line of life has become, in an increasing degree, a specialist. Whereas once he was exercising his physical powers in manifold operations, he has now to repeat a single movement or set of movements with monotonous precision. It is obvious that such specialism, unless relieved by greater opportunity for leisure, and an enlarged faculty for exercising thought during that leisure, must inevitably tend to reduce and crush the dynamic energy of the man.

Now this capacity for exercising thought can only become operative, except in a small minority of cases, by the stimulus of a previously acquired training more or less applicable to the character of the future life-work during the years of pubescence—in other words, by a properly directed education. This is so obvious that it would be lost labour to emphasise it, were it not almost completely overlooked or deliberately disregarded in our subjects and methods of study, and even in certain proposals for their reform which have been recently attempted.

Most of our would-be reformers look upon the matter as the composition of a quarrel—as a crowd of diverse subjects with competing claims—rather than a problem of how best to accommodate education as an organic whole, so as to keep pace with the enormous changes which are taking place in

the relations of the world of nature and the world of men. As a result, education has hopelessly lagged behind, and the child-man is still being trained as a human machine to be turned out as one of the bunch, and not as an individual prospective creator in a new order of things.

The school is looked upon too much as a self-contained entity in itself—a fortress, through the gates of which the student is to be propelled into the diverging highways and lanes of the world, rather than as a preparatory workshop for the manufacture of a creative life in each and all of its students.

But English education has lagged behind the spirit of the age, and still lags, in a more serious respect. It has never visualised the necessity, which is not only essential to the working out of a true democracy, but is the essential birthright of every one of its children, of affording an equal opportunity to each and all in the pursuit of a completed training until past the age of pubescence. It has been unmindful of the democratic gospel that any nation which does not afford such an opportunity must fall behind in the race of nations.¹

¹ Even such a liberal thinker as Lord Bryce does not seem, unless I misinterpret him, to rise to this conception, for he writes:—

‘For the school the problem is how to discover among the boys and girls *those who have the kind of gift which makes it worth while to take them out of the mass and give them due facilities*

32 AMERICA AT SCHOOL AND AT WORK

But to revert to the main subject. Educational thought in the United States, with that power of vision which seems to belong to a nation, as quick in grasping the necessities of the age as it is bold in bringing experimentation to bear on those necessities, has for some time been profoundly discontented with the lack of adjustment of its schools (founded originally on English models and still partaking of their atmosphere) to the social and industrial needs and conditions of the twentieth century.

Though these schools offer theoretically equal opportunity to all to pursue their education from the Kindergarten to the University, yet it is now being more fully realised that there has been an engrained tendency on the part of the formal school subjects and methods to become aristocratic, because they meet specifically the needs of one kind of children only, that is, of the more prosperous.

for pursuing these studies at the higher secondary schools, so that they may proceed thence to the Universities and further prosecute them there.' (Fortnightly Review, April 1917.) The italics are mine.

Here truly is a 'selective draft,' just as is being carried out by the present system in vogue of offering 'free places' to such children only as show promise at the age of twelve. Is this sort of view compatible with the spirit of true democracy? Even if it were, is the discovery of this 'gift' possible at the age contemplated?

Any one armed with a knowledge of pedagogic biology would emphatically answer 'no.'

And this criticism has been endorsed indirectly, but very practically, by the fact that the Federal Government has lately re-enacted in spirit the so-called Lincoln Acts of 1862, by the introduction of legislation offering huge grants of money to the different States to stimulate the teaching of agricultural, industrial and home economics, but limiting these grants to the encouragement of students over fourteen but of less than College grade.¹ Now this legislative action on the part of the Federal Board in thus setting its seal on the vital importance of vocational training expresses a settled policy which seems not only to symbolise a true democratic ideal, but to point the way to all the educational authorities in the different States to keep abreast of the scientific evolution of the twentieth century.

Is it too much to hope that there will emerge from the present chaos a British statesman, or set of statesmen, who can see that a nation whose education is crystallised is doomed to decay industrially and socially, that the whole of the education of the prosperous classes is at present outside the scheme of a national education, and must be brought into it, however rooted in exclusive traditions, and however organic the revolution may be, and that (finally) no safer escape from the economic, industrial, and

¹ See Chapter VIII. for more detailed reference to the Smith-Hughes Bills.

social downfall of Great Britain can be imagined than to follow the example of the Federal Government in the United States, and to pour with unstinting (and indeed lavish) hand millions of State Funds annually into the lap of education for the establishment of a thoroughly democratic and truly national training for all future citizens ?

Whether the set of men who now occupy offices in Whitehall, and most of whom have been trained in more or less exclusive environments, have national vision, spiritual aloofness, and dynamic force sufficient to put their hands to this task, is a question which cannot fitly be answered within the compass of this chapter, and perhaps not without a searching analysis of the past records and present dispositions of those who are guiding the educational destinies of our nation.¹

Moreover, even if the will and power of those set in authority be beyond question, it may well be doubted whether there is much hope of such an educational revolution (which is the most urgent need of the English nation to-day) unless Parliament itself be so completely reorganised that the system of representation by boroughs and counties—a truly parochial mode of governing an Overseas Empire of

¹ This chapter was written of course before the appearance of Mr. H. A. L. Fisher's Education Bill—probably the greatest gift to the people of the future ever bestowed on our country.

400,000,000 people—gives place to a scheme of representation which will give at least equal prominence to educational as to other predominating interests, whether they be professional, commercial, industrial, or agricultural.

CHAPTER VI

CO-OPERATIVE MOVEMENT—I

THE conviction that the successful operation of machine-spiced industrial enterprise at the hands of employers, managers and workmen alike can only come, as a general rule, from their previously acquired training in the days of youth, has of late years sunk deeply into the minds of the American people. Discontent with the old formal methods of education has found expression not only, as might have been expected, in those classes which are interested in industry, but also in all ranks of educational thinkers, including those who might be thought to be by tradition and associations most wedded to what might be termed collegiate learning.¹ Coincidentally, efforts of varying character in the different States have been abundantly made to correct deficiencies and fill up educational gaps in all stages of the educational life. The pre-vocational schools of

¹ The names and writings of such men as Dr. Charles Eliot, ex-President of Harvard University, and of Dr. Abraham Flexner, of the Rockefeller Foundation may be quoted as interesting examples.

New York and Boston, the continuation schools of the Middle West, and the Junior High Schools of California, have addressed themselves very successfully to the twofold task of discovering vocational aptitudes in children from the age of twelve onwards, and at the same time, by combining manual work with book-study, of tempting boys and girls to proceed with formal instruction beyond the minimum legal limit prescribed for leaving school.

But by far the most potent and scientific factor in linking up the interests of the School or College and factory, as well as the most hopeful in securing the future industrial prosperity of the American nation, is to be found in the part-time-school and part-time-labour system, which owes its birth to the far-sighted genius of Dean Schreiner of Cincinnati in the engineering courses of university grade, but which has been adopted also with almost equal success in the secondary or High Schools in that and other cities.

It is the most scientific factor, because it is continually adjusting general principles to the needs of industry, and readjusting practical shop or factory experience by appeals to the domain of scientific law—and that, not in the casual or irregular way, or at long intervals of time, but by fortnightly movements of the student to and fro between theory and practice.

38 AMERICA AT SCHOOL AND AT WORK

It is also the most potent factor in this linking up of collegiate and industrial life, because it meets squarely the basic problem of an industrial community.

In 1906 the Engineering College of the University, under the auspices of Dean Schreiner, set about installing a school for training men for the higher positions in industry by entering into a co-operative arrangement with the industrial plants of the city.

The scheme is simple enough. The students alternate every fortnight between the University and the industries, and are divided into two equal sections, so that while one of each pair of students attends the University course, the other is in the factory and *vice versa*. Neither University nor factory becomes the predominant partner, though the latter administers a system of practical training approved by the University. The functions are sharply defined, and the combined training is designed to bring out the qualities of initiative and direction gained by the student of general principles together with the thorough practical knowledge necessary to leadership in production. More than four hundred students are undergoing this combined course at the present time (1917) and the University co-operates on this basis with nearly eighty firms.

In connection with this scheme in the college grade continuation schools for shop apprentices

were opened under the direction of the public school authorities ; but whereas in the ordinary continuation schools the shops agree to release their young workpeople for periods of from four to eight hours a week to the public schools for school instruction, a development has taken place in the High Schools of Cincinnati and other places which removes the directing power from the shop to the school. In the ordinary continuation school plan the school has no authority over the kind of work the young people do in the shop, but according to the co-operative school which is now in full working order in the High School of Cincinnati, in three of the High Schools of Boston, in the Struyvesant High School of New York, at Fitchburg, at York School, Pennsylvania, and many others, the shop work is planned with the approval of the public school authorities.

It is easy to see that the co-operative plan requires more delicacy of adjustment in the High School stage than in the University grade.

There is, first of all, a possible tendency for the shop or firm to 'exploit' the boy for the supposed benefit of his employer. Thus a boy may be kept too long at one specific piece of work—a result which would be injurious to his power of initiative or to a large grasp of the general principles of skilled workmanship.

Or again, there may be a temptation on the part of the less scrupulous shop or firm to tempt the more promising and skilful boys away from school altogether.

The immaturity of boys would conceivably render them easier victims to these wiles. To counteract this risk, a 'co-ordinator' is employed, who is the representative of the Headmaster or even the Headmaster himself, but more generally the manual instructor of the boy in the school, who 'mediates' between the employer and employed, moving frequently between the school and the shop.

Much indeed of the success of the scheme in the secondary or high-grade school depends on the tact and the enthusiasm of the Headmaster, and more particularly of the co-ordinator. The problem always consists in so organising the work of each pair of boys in the shop, without appearing to interfere with the productive processes of the firm, so as to make the part-time spent in school (a fortnight at a time) most fruitful for the industrial 'uplift' of the boy in shaping his future life. The writer has little doubt, from a close examination, first of the methods of work in the University of Cincinnati, secondly, of a study of the work done in the different High Schools adopting the co-operative plan, and thirdly and chiefly, by many visits

to firms employing the 'bi-weekly' boys and by questioning the boys themselves, the employers, the school instructors and the parents, that the general underlying principle of alternating theory with practice is destined to become in the future the best solution of the problem of vocational training.

Thus in the York High School, Pennsylvania, there was a unanimous agreement among all the classes named above that the scheme which was begun there in 1911 had proved extraordinarily successful. One hundred and twenty-six boys in that School are working for fifteen different firms, the principal of which were the machine shops of the York Manufacturing Company and Messrs. A. B. Farquhar & Co., employing 54 and 28 boys respectively.

For the fifteen firms, 109 boys were working as machinists, 7 as patternmakers, 4 as electricians, 2 as cabinetmakers.

The writer had interviews with a dozen of these boys, and all spoke with enthusiasm of their work, while none showed any inclination to break away from school. As one of them said: 'He had learnt that school meant something, and meant something big.'

The boys destined for the co-operative course enter the High School for four years (from fourteen

to eighteen). In the first year they do not begin apprenticeship but are entirely in school.

The following are the subjects of instruction :—

First Year.—English, Algebra, Geometry, Practical Arithmetic, Physical Geography, Study of Industries, Freehand Drawing, Blue Print Reading.

*Second Year.*¹ English, Algebra, Geometry, Mechanism of Machines with work in school shop, Physics, Mechanical Drawing.

*Third Year.*¹ English, Algebra, Trigonometry, Physics, Mechanism of Machines with work in school shop, Mechanical Drawing, Shop Methods.

*Fourth Year.*¹ English, History and Civics, Applied Mechanics, and Strength of Materials, Mechanism of Machines with work in school shop, Chemistry, Mechanical Drawing.

¹ In these years they are apprenticed to various firms, and have to work 3400 hours, receiving from 7 cents to 10½ cents an hour.

CHAPTER VII

CO-OPERATIVE MOVEMENT—II

IN the Struyvesant High School of New York, 35 boys only out of a total of 2000 students in the school are working on the co-operative plan for different firms, principally boilermaking. But the general scheme has not got under way, or at any rate has not made much progress.

Four High Schools in Boston have adopted the Co-operative School plan.

1. The Hyde Park High School (nine miles from the city).
2. The Dorchester High School.
3. The East Boston High School.
4. The Quincy Pre-vocational School.

Of these, the Hyde Park High School showed the largest number of co-operative students (53) working for twelve firms, of which the writer visited two—the Sturtevant Company, and the American Tool and Machine Company, where 10 to 18

boys were employed respectively. Interviews with all these showed very satisfactory and encouraging indications that the principles adopted found favour among the students, while the manager, and even the foremen who had originally regarded the scheme with disfavour, spoke with enthusiasm of the work done by the boys as being far superior in intelligence and initiative to that of the ordinary workman.

'They are all cut out to be leaders,' said the managing director of one of the firms to the writer. Other firms employing boys were engaged in sheet metal, electric, moulding, patternmaking, and blacksmith work.¹

While the Hyde Park High School, the East Boston High School, and the Quincy School specialise in sending their students to 'Machine' firms, the Dorchester High School send theirs to wood-working firms such as the Lawley Shipbuilding Co., the A. T. Stearns Lumber Co., and Vose & Sons Piano Co. Here the results were equally encouraging and fruitful in stimulating the vocational training of the students. The subjects for school study in the Boston Part-time High School differ little from those in vogue at York School, Pa., except that drafting and industrial history take a more pro-

¹ In these years they are apprenticed to various firms, and have to work 5400 hours, receiving from 7 cents to 10½ cents an hour.

minent, and industrial geography a more subordinate place.

During the first of the four years, *i.e.* before the period of apprenticeship, excursions are made as a part of the regular work to various manufacturing establishments in the neighbourhood, with the view of enabling the pupil to decide upon the kind of trade he prefers to learn. Another point of practical importance in the working out of the part-time scheme consists in the fact that the Advisory Board for the Industrial course is composed partly of members of firms where the boys may be destined to work as apprentices.

The Industrial School of the city of Beverly, Massachusetts, presents features somewhat similar to, but in many respects unlike, the institutes already mentioned. It differs from other co-operative schools in the fact that all its part-time students are in the employment of one firm only—the United Shoe Manufacturing Company.

The students, 50 in all, are divided into two groups of 25 each, and each group attends the school courses every alternate week, instead of the usual alternate fortnight. Another peculiar difference is that the boys are not paired for work on the same job, in the week during which they are in the employment of the firm, but each boy has his own job, for which he becomes individually re-

sponsible. It is claimed that this plan prevents boys from being unequally yoked, and that the work produced by the single boy is more efficient than the joint product of the two together.

On the other hand, the school is not a Corporation School, inasmuch as the school is financed by the city and State co-jointly, the firm only supplying the pupils.

Another important feature is that there are two head division instructors—one for Group A and one for Group B, and that each remains with his group both in the school and in the shop of the firm, acting as a co-ordinator in both.

In the factory of the United Shoe Machinery Company the boys are put to work on parts of machines as commercial products and under actual shop conditions.

The boys are employed always on piecework. They do not receive help from their fellow workmen, but are directed and taught by their special instructors. There are five such instructors, one to every ten boys. The machines in use are grinding machines, drill presses, lathes, milling machines, and other (miscellaneous) machines.

The entrance into the school and into the firm is simultaneous. There are no boys in the firm who are not in the school, and there are no boys in the school that are not in the firm.

There is no definite time limit to the course in the school, but three years is the normal. The principal studies in the school are Mathematics ten hours, Mechanical Drawing five hours, (applied) Science five hours, (applied) English five hours, Machine study five hours—thirty in all, which is the length of the school week (*i.e.* five days of six hours each).

The week of employment is one of fifty hours (*i.e.* five days of nine hours each, with five hours on Saturday). The school was opened in 1909 'for the purpose of instructing youths between the ages of fourteen and twenty-one in the machinist's trade.'

The writer had several interviews with the boys employed, and with the foremen. The unanimous testimony of the latter was that the boy-students were resourceful, conscientious, skilled and careful in their work, while the boys expressed their satisfaction at the combination of shop and school.

The United Shoe Manufacturing Company, which has 4800 employees, is too big a firm to be tempted to 'exploit' boys for its own advantage, while, for the same reason, there was no evidence that the firm was desirous of hurrying on the boys from part-time to full-time employment.

The last, but by no means the least, in the category of part-time schools, is to be found in Fitchburg, Massachusetts, a city fifty miles from Boston, with a

population of over 40,000 and the centre of a district containing 150,000 people. A local manufacturer, a public-spirited citizen, who had attended in 1908 a meeting addressed by Dean Schreiner, determined to adapt the plan to the needs of his native town, thinking that he saw through it a solution of the problem of industrial education for boys of the High School age. The scheme was not only the earliest, but has proved one of the most successful during the past nine years. The manufacturers of Fitchburg not only caught eagerly the spirit of the enterprise, but have ever since been its most strenuous advocates.

The special point in the Fitchburg plan consists in the fact that the boys pursuing it form an organic part of the High School, and are neither socially nor otherwise separated from it.

They are employed in such varied occupations as machinist work, patternmaking, draughting, iron moulding, tin-smithing, printing, textile and commercial work. The course lasts for four years, *i.e.* the High School period (fourteen to eighteen). The first year is devoted wholly to the school, but for the next three years, the boys are paired and alternate weekly between school and shop.

The school week consists of five days of six hours each, *i.e.* thirty hours in all. The shop week lasts for five and a half days of nine hours each, with a half holiday on Saturday, *i.e.* fifty hours in all.

The writer paid a visit to the Putnam Machine Works and the Simonds Manufacturing Company, and had interviews with the boy-workers, the managers and foremen of the firms, and with the co-ordinator. In all quarters there was an enthusiastic consensus as to the success of the plan.

All the studies in the school are correlated more or less directly with the work in the firms. It is noticeable that throughout the whole four years, one quarter of the total school hours is accorded to English, while Mathematics, Mechanical Drawing and Bench Work fill up the rest of the time during the first year. In the second, third, and fourth years, *i.e.* the 'Shop-Years,' Physics, Chemistry, Mechanism of Machines and Civics are added.

A general review of the co-operative scheme in the various cities in which it has been applied, leads to the conviction that it is one which will be gradually adopted in the future more generally throughout the United States, and the writer is of opinion that it would solve in Great Britain the vexed problem, how best to prolong the educational stage in a country where the temptation to leave school early, for the purpose of earning a living in order to eke out the parental earnings, is much more pressing than in America, where wages are comparatively high.

(1) The average earnings of these part-time

workers amount in most cases to nearly 120 dollars, *i.e.* £40 a year.

(2) The result on the wellbeing and general intelligence of the boys can hardly be overestimated. The verdict of both managers and foremen is to the effect that the part-time apprentice learns his trade far more quickly than the ordinary apprentice. He is almost always looked upon as a probable foreman or skilled worker in embryo.

The happy combination of what may be called scientific power and empirical knowledge, together with the continual alternation at frequent intervals between both, is freely acknowledged, not only as theoretically sound, but as justified by practical results. But the pivot of the success of the scheme must always be in the wise choice of the co-ordinator, who must combine tact and firmness, together with an adequate knowledge of the work of the firms in which the apprentices are engaged.

(3) The terms of the agreement between the parent and the employer ought to be so drawn up that the former guarantees that the boy will complete the full High School course, and that the employer agrees to teach the boy his trade in a broad and liberal sense, so that the work done should be subject, as far as may be, to the demands of a wide, industrial education. There should be, in fact, a real correlation between school and shop.

From a careful study of the actually observed conditions there appears to be no reason whatever why the scheme should not develop into one of general application in all industrial communities, though it is equally clear that it must be always elastic, *i.e.* susceptible of modification to suit the needs and conditions of the various trades concerned in its adoption.

CHAPTER VIII

CORPORATION SCHOOLS—I

ABOUT two hundred large firms in all have set themselves to carry on education courses for their employees, most of them members of the National Association, though some are not. There are one hundred and six members of the association. The total capitalisation of these firms amounts to four billion dollars. Not less than five hundred thousand employees in all undergo these educative courses.

The scheme is only about six years old, but, at the present rate of progress of the movement, it is safe to predict that within a decade every large industrial institution in the United States will be forced to undertake the further education of its own workmen, not by any means as a philanthropic enterprise, but as a matter of sound economics. Indeed any scheme which sets out to undertake such work *merely* on a philanthropic basis is generally doomed to fail. For indiscriminate philanthropy, like indiscriminate charity of all kinds, leads pioneers along wrong or mistaken ways of thought and action.

The firms which carry on these schools are of a very varied character; indeed they include sixty-four different branches of industry. Railways, Shoe Manufacturers, Electrical Engineers, Ship Builders, Motor Car Manufacturers, Life Insurance Officers, Bankers are among the number.

The age of workmen under part-time instruction ranges from fourteen and sixteen to grey-haired men.

The school work done in these firms is in no way intended to duplicate the work of the Public Schools. On the contrary it is intended to begin where they leave off. The only exception is in the two subjects of English and Mathematics, and then only when employees are hopelessly deficient in these two subjects of education. So far from there being any rivalry between the Public Schools and the firms, it is freely admitted by the latter that if and when the Public Schools, *i.e.* the Elementary and the High Schools can and will cover the ground, the educational facilities offered by the firms should automatically disappear. The firms have no desire to teach, but they now take up the work as a matter of economics, for self-preservation and efficiency. This fact incidentally shows that there is a call for vocational instruction which at present the Public Schools do not supply.

The course of education in these 'Corporation Schools' varies absolutely according to need, and

54 AMERICA AT SCHOOL AND AT WORK

may be extended from three weeks to four years. Then again, the length of time of course depends largely on the nature of the manufacturer or product in which the firm is a specialist. All the firms without exception pay their workmen for the hours during which they are receiving instruction just as if they were actually engaged in increasing the output of the firm by manual work.

This educational work is carried on both during the day time and in the evening, but, as might be expected, the evening instruction is not so effective as that imparted and received in the day time. There seems to be no reason to suppose that the Trade Unions frown as a rule upon the system on the ground that it might be exploited in the interest of employers, though suggestions have been made from time to time that it may interfere with the freedom of the workman by binding up his interests too closely with the firm.

In connection with this system of continuation-instruction, it is of interest to note that the Federal Government has recognised the importance to the industrial efficiency of the nation that education should be carried on after the age of fourteen. By the Federal Smith-Hughes Bill, which has recently passed into law, \$3,000,000 has been voted to begin with, or nearly \$7,500,000 in seven years, for allocation to such schools as are carried on in the different

States under State or Municipal control, which should provide continuous education for pupils between fourteen and eighteen. But it is specially provided in this Bill that the education should be agricultural, industrial or concerned with home economics, and shall not be 'intellectual' education.

In this action the Federal Government has recognised the principle that no country can be permanently greater than its natural resources of wealth. It has also recognised the principle that the farm and the factory are the main resources of national wealth, since all arts, sciences and professions depend ultimately on agriculture and manufacturing produce. It has further recognised that hitherto its educational system has tended to develop the powers of the specialist, *i.e.* of the professional man, to the neglect of the education of the farmer and the manufacturer.

Further still, it recognises that America has failed, as Great Britain has failed, to conserve or develop its natural and manufacturing resources, and that its education has been at fault in not bringing scientific knowledge into active touch with agriculture on the one hand, and with factories on the other—in other words, that the man of science has been an Academic, and not a Co-operator in effective production.

One of the most striking and successful examples

when all the passions of Nero were unloosened, and Britannicus was murdered, poisoned while supping with the Emperor and Empress ; his sister, when she herself was imprisoned, and her life sought by poison too, would it be wonderful if the feelings of the mother sunk before this baseness and barbarity.

But it did not ; and when she was charged with conspiring against her son, pleading her own cause, in a passionate outburst of feeling against Julia Silana who brought the charge against her, she exclaimed “the woman who has made this accusation, never had a son.”

Poor mother, she was reconciled to her son ; she believed the reconciliation sincere, but it was not ; the world was not deceived. Nero was resolved upon her death, but he could not well arrange the method of it. But on the festival of Minerva, he invited her to Baia, he sent an affectionate message to her, saying,—“From such a mother, one must endure much and forgive all.” A warning voice reached her, but she did not regard it, she flew to her son.

During the festival, he placed her at his right hand, and talked to her, sometimes with familiar gaiety, sometimes with an air of gravity, that gave to his whispered sentences the air of state secrets.

At an hour after midnight, Agrippina withdrew, leaving the younger guests to prolong their orgies. Nero himself conducted her to the barge, in which she was to return. Their parting, it is said, was marked by the strong emotion (whether of apprehension or of regret) of the emperor, who stood on the shore till the

little vessel, on which his eyes were fixed, had disappeared behind a headland.

The night was calm and clear ; the firmament sparkled with the lights of myriads of stars ; and the sea, as if to accuse the criminal, was smooth as a mirror. The happy mother (then all a mother), reclined on a couch spread on the deck beneath a canopy of rich drapery ; in the fullness of her heart, she continued conversing with Creperius Gallus, who stood near the helm, and with her freed woman, Acerro-nia, who lay at her feet. They were still felicitating her on her perfect reconciliation with the emperor, and spoke of happy days to come for Rome and for the world, when the canopy fell above them suddenly with a tremendous crash, which proved it to be laden with lead and iron. Gallus was killed on the spot. A rower rushing forward to dispatch the empress, arrested the attention of Acerronia, who exclaiming " You mistake—I am Agrippina," received the blow on her bosom, and expired. Agrippina, with her usual energy and presence of mind, plunged into the calm waters, and was taken up by a vessel from the Lucrine Lake, and conveyed to Bauli in safety.

Nero received the intelligence of the failure of his machinations with horror and consternation. Agrippina alive, and aware of his meditated crime, was a witness against him to the world—to all posterity. So he called to his councils Burrhus, the warrior, and Seneca, the moralist, and the death of the daughter of Germanicus was again resolved on ; and instantly she was to be murdered in cold blood ;

department are given an opportunity to become machinists or operators. Other apprentices in the composing room are trained to handle type, and are taught correct spacing, division of words, and punctuation. These points are, however, also emphasised in the instruction of English in the school-room. Indeed, there is no one part of the instruction given which does not dovetail into some other.

The proficiency in design shown by the boys in the pre-apprenticeship stage is most remarkable. The writer was shown specimens executed by students of fifteen which proved that accuracy, thoroughness, and love of beauty, may be cultivated even in early boyhood.

CHAPTER IX

CORPORATION SCHOOLS—II

THE John Wanamaker Store in Philadelphia which is probably the largest of its kind in the United States, has excelled perhaps all others in welfare work for its employees, but particularly on the side of their educational advancement, with the view of rendering them living factors in the success of the store's operations. Efficiency is the aim, philanthropy only the by-product.

The educational apparatus, which is located at the top of the building, comprises more than a dozen lecture rooms, and an auditorium, a library, besides the surgical and dental consulting rooms, sick wards for male and female employees, etc.

The hours devoted to continued education are paid for by the firm, and the subjects are vocational, *i.e.* suited to the particular kind of standard and department in which the apprentice is likely to find his best activities most usefully employed. Here, as elsewhere, it is freely admitted that the educational organisation has been so planned as to fill up any

deficiencies in the elementary or grammar school system which might check a boy or girl from pursuing successfully a commercial or industrial life. It is admitted also that the organisation would not be required if the formal school systems met the requirements of the age. Moreover, the laws of all the progressive States prescribe that if a boy or girl leaves school at the minimum age, he or she must continue their education in some form or other.

It is not surprising, therefore, to find that arithmetic, spelling, penmanship, and English are among the subjects of instruction, the hours for which are generally arranged for the morning, when comparatively few customers visit departmental stores. Every subject, however, has a direct reference to the vocation in life in which the student is engaged.

Arithmetic, for instance, takes the form of bank discounts, stocks and bonds, partnership and rapid addition. There is also training given in business law, interest and usury, insurance, contracts, corporations, highways, etc. Geography embraces a study of the distribution of the vegetable, mineral and commercial products of the U.S.A., its transportation facilities, telephone, telegraphs, and submarine cables and the relation of all these to foreign countries. Book-keeping, history, civics, and correspondence

are treated in the same method, *i.e.* as applying to the business of life.

Of a slightly different character and ideals is the educational work of Wm. Filenes & Sons of Boston. These remarkable men, who have wrested success out of failure by the study of 'human engineering,' have instituted in their clothing store—the largest of its special kind in the U.S.A.—a system of schooling where moral welfare and academic education produce a combined result, which has rendered the store probably the most popular of any in the country.

Cultural aims are indicated in the system of instruction. Manners and methods in approaching customers are regarded as equally important as direct knowledge of salesmanship. Indeed the personal factor is the aim, and whatever deficiencies may exist in the Public School as regards its success in training THE INDIVIDUAL as distinct from the TYPE, is made good in the hours set apart by Wm. Filenes & Sons for the humanising of commerce.

The General Electric Company was the last, but not the least, example of Corporation Schools visited by the writer.

Here the psychological factor does not loom so largely as the evolution of the creative powers of the workman.

62 AMERICA AT SCHOOL AND AT WORK

The General Electric Co. employs from 15,000 to 17,000 men. The apprentices, whose ages range from fourteen to twenty, number 300, and all without exception are compelled to spend, at the expense of the Company, $7\frac{1}{2}$ hours a week, *i.e.* $1\frac{1}{2}$ hours for five days, in receiving instruction on the principles of the manual work in which they are engaged for the rest of the working week.

From the nature of their employment, mathematics, mechanical drawing, electricity, physics, and chemistry form the chief objects of study. It is contended that this close touch between theory and practice is an ideally evolutionary process in the skill of the working apprentice. The aim of the instructors, five in number, is to render all the students capable of becoming foremen. The classes are divided into nine grades for academic purposes.

To sum up—it has become increasingly recognised in America, and most conspicuously perhaps throughout the East and Middle-Western States, that the success of commercial and industrial enterprises depends entirely on the promotion of general efficiency in all their component parts.

In earlier periods, both in the United States and Great Britain, an attempt was made to promote this efficiency by centralising authority and impelling

the units to act as parts of a carefully devised machine. Two factors have arisen during the last quarter of a century which have exhibited the weakness of such a system, (1) the continually increasing bulk of huge industrial and commercial concerns, which puts a limit to the power of effective centralisation ; (2) the social awakening which has followed the clash and conciliation between capital and labour. It has been discovered by the brightest and most progressive spirits in both countries that permanent success can best be achieved by promoting such friendly co-operation and interest between employer and employed that every unit in the latter class shall maintain its independence and initiative—that the employer does not do his whole duty in securing efficiency by paying his employees good wages for effective labour, but that he is bound to see that, through educational and other means, his work-people should be continuously progressive factors in the development of the business. .

In other words, he must recognise that man is more than a machine, that he has a dynamic and not merely a static force, and that efficiency without personal interest and friendliness ceases to be efficiency. The trade war of the future will be decided on this basis. The new and formidable class of highly skilled workmen under starched control which Germany has long been preparing, can only be out-

distanced by closer attachment and more dynamic co-operation between employer and employed. Towards this co-operation the free and independent temperament of Anglo-Saxon peoples should more naturally incline them.

CHAPTER X

PRE-VOCATIONAL TRAINING

IN the foregoing chapters it has been repeatedly emphasised that the American people, beyond all other civilised races, regard Education as their one inalienable asset as well as their great national birthright.

This does not necessarily imply that the standard of learning is higher, or that the best trained men in the world are to be found in the Great Republic across the waters. Germany, owing to the system of paternal discipline which prevails, and which imposes education on all without distinction, has certainly produced on the whole a larger number of learned students, while England, having concentrated her chief attention on the *élite*, can boast of a higher standard of scholarship in various departments of learning.

But for sheer alertness of intelligence universally distributed, springing from a love of knowledge for the practical business of life, there is no civilised man who can compare with the American citizen.

And as the people are alert in intelligence, so

they are bold in educational experimentation, urged thereto by the hope and belief that their children and children's children may enter the world better equipped than were their forefathers.

And as each State and sometimes each city preserves educational independence, and each has its own special problems to solve in fitting in the educational programme with its particular commercial and industrial conditions and resources, it follows that each city and each State becomes an area for (greater or less) experimentation in systems and subjects.

This is what makes the study of American Education so extraordinarily interesting and suggestive to the educational investigator. It is refreshing for an English Educationist theoretically bent on reform, to shake himself free from the miasma of traditional prejudices which are regarded as part of an established order, and to find himself in an atmosphere almost entirely unclouded by them. I say '*almost entirely unclouded*,' for he who knows something of American Educational History is quick to discover that in the Eastern States, where Commerce and Industry are at full pressure, and even (in places) at fever heat, the elasticity of the school system is less observable than in the Middle and extreme Western States. This seems at first sight paradoxical, but the reason is to be found of course in

the fact that the younger States of the West having been developed at a later stage and at a greater distance from European influence, have been left far more free in moulding educational requirements to fit the necessities of time and place. The Eastern States, on the other hand, have inherited to some extent European, and particularly English traditions.

Though therefore immense strides have been made since (say) the date of the Mosely Commission 1903, there has been a distinct tendency for educational theory to outrun educational practice in the Eastern States.

This is especially noticeable in the elementary schools. They have been reproached with their lack of adjustment to the immense social and industrial changes which the world has witnessed during the last fifteen years. And though the perception of this organic change has been far quicker and more profound in the U.S.A. than in Great Britain, nevertheless the educational values deemed important inside the schools themselves (where the interest of the teacher is mainly concentrated on the well-being of the child up to the end of school life only) have proved themselves increasingly at variance with the actual needs of the pupil in preparation for his or her vocation in life.

The discovery of this variance by educational

thinkers has resulted in the establishment of what is known as 'pre-vocational training.'

The insistence on the necessity of this kind of training has developed two distinct, and to some extent opposing systems.

The one is known as the Gary plan, having been initiated at Gary, Indiana, a city which owes its quite recent origin and growth to a single factor—the United States Steel Corporation—and which therefore offers a solution of a comparatively simple social and educational problem. The other may be called the 'Ettinger plan,' from the name of its founder, and has had to meet the complex problems prescribed by the needs of the second greatest city in the world—New York.

The main features of the Gary system are that it attempts to link up the educational needs of a single neighbourhood at the cheapest possible cost to the taxpayer, and to provide a complete educational outfit from the cradle to adolescence. There is no break in the continuity of the education given—no gap, geographical or instructional, between the ages of six and sixteen. To secure this continuity a course is provided which enables the student before the grammar school age (fourteen) to go through a course of miscellaneous manual training, with the view of discovering his or her natural aptitudes.

The school is divided into two completely separate groups, the use of the lecture rooms being duplicated, one group being engaged in workshop, gymnasium, or supervised outdoor sport, while the other group is busy at 'recitations,' i.e. book work. Thus, no class-room is ever vacant.

It is easy to see how economy is gained by such a system.

Skilled union mechanics are employed to teach manual labour, and the salary of the instructor is paid for by the repairs and improvements effected by him on the buildings with the help of the student. The weakness in the system seems, to the eye of the practised educator, to consist in the fact that the hours utilised for the academic and the manual training courses respectively are regarded as equally productive for their respective purposes.

Thus, to take a concrete example, any given group of children may conceivably spend the larger part of the morning hours, which every expert schoolmaster knows to be the more serious and important period of the day, in manual exercises, while it devotes most of the afternoon hours to book recitation, when the mental and bodily activities are not at their best.

A second criticism may fairly be advanced that the pre-vocational courses are, on account of the system employed, casual and unorganised, and the

70 AMERICA AT SCHOOL AND AT WORK

question may be asked ' How after all has the course adopted practically and specifically fitted the student for his or her particular vocation in life ? ' and again, ' Have the tests when applied to the after life of the student been wholly satisfactory ? '

The Ettinger plan would appear to an educational observer to fall more closely into line with the physiological and psychological evolution of childhood and pubescence.

At the end of the sixth year of the grammar school age (twelve) a departure is made from what may be called the Grand Trunk plan of education, and a differentiated course of study organised.

The age of twelve may indeed be thought to be too young for such specialisation, but it must be remembered that the limit of age during which education in some States is compulsory is fourteen only (though in the more progressive States sixteen), and the chief aim must therefore be how to tempt the child to continue his or her education up to, or if possible beyond, the minimum legal limit. It is the practical way of answering the question put both by the wage-earning parent and the child all over the world—' What is the good of continuing education at all ? ' ' What asset will it bring to aid the successful pursuit of the vocations of life ? '

According to the Ettinger plan, the boy is en-

couraged, after discovering his own aptitude, to make a sober selection of his future occupation—and that in an organised way, and not in the unorganised and possibly sloppy way which seems the weakness of the Gary plan.

Again, according to the scheme now under survey, every school is equipped with a complete shop—machine, sheet-metal, wood-working, electric-wiring, plumbing, and drafting, bookbinding, etc., etc., and the work done is not directly organised for the repairs or development of the school buildings but with due regard to, and after analysis of, the industrial conditions existing in the city in which the school is located. And again, the movement from shop to shop, or from one department of shop work to another is on the principle of industrial progress, such as would actually obtain in the store or in the firm itself.

Finally, the school scheme is so organised that the manufacturing, the installing, and ancillary trades are correlated in the instructional processes to be followed by the pupil. In other words, the actual conditions of the industrial world are by this plan intended to be faithfully reproduced in the organisation of the school system.

To sum up—the Gary scheme appears to contemplate the school as the centre—the entity—of each system, while the Ettinger plan looks upon

the school as the microcosm of the larger life that is to be.

Whether therefore from the physiological and psychological, or from the purely practical standpoint, there can be little doubt in the mind of the educational thinker that the Ettinger system is destined to play the more effective part in the future evolution of vocational training in a progressive nation like the American.

CHAPTER XI

CHILD LABOUR—I

EDUCATORS in America during the past few years have increasingly realised that, whether the age at which a child is permitted to leave school be fixed at fourteen, or, as in some few States, at sixteen, state control should no longer be limited to the period covered by school attendance, but supervision should continue up to the age of eighteen. Co-operation between parents, teachers, and those who understand the workings of the labour market for children, is necessary to ensure this end. Hence vocational bureaux have been established in many of the larger cities where vocational guidance and the supervision over employment can be successfully organised. These bureaux were in many cases, as in Chicago, started by philanthropic societies, but have eventually been taken over by the Boards of Education. Vocational advisers have been appointed by the Board, whose duties are to study industrial opportunities, to give advice to parents and children, to find situations for the latter, and to follow up and supervise the industrial record of every child until he or she reaches the age of eighteen.

In the city of Chicago the minimum legal limit of age for leaving school is fourteen, but the Board of Education reserves the right to compel attendance until sixteen, unless it can be proved that the child is in some definite industrial employment. There exists, however, no machinery for following up breaches of this law, though the employer is under penalties to employ no child unless he or she can present a certificate showing age and the school of graduation.

Recent statistics go to prove that 42 per cent. of those seeking work have graduated from the 8th grade (*i.e.* the highest standard in the elementary school), or from the High School, and that 84 per cent. of the children leave school before the age of sixteen.

The following table sets forth the reasons given for leaving school at fourteen in the case of 6758 children :—

	Number.	Per-centage.
(a) Necessity of earning a wage	2187	32·4
(b) Desirability but not necessity of ditto	1507	22·3
(c) Dissatisfaction with school life	2025	30·00
(d) Preference for work over school	301	4·4
(e) Graduation in 8th grade	381	5·6
(f) Inability to afford books in High School education (notwithstand- ing that the education given there is free)	231	3·4
(g) Other causes	126	1·9
Total	6758	100·

In Massachusetts the reason given of 'necessity' is 8 per cent. less than in Chicago, *i.e.* 24 per cent., while 66 per cent. children, as contrasted with 30 per cent., allege 'dissatisfaction' with school life. With reference to this schedule of reasons, it will of course be understood that the schedule of reasons given above cannot be regarded as being definitely differentiated. Mixed motives operate in many cases.

It may be interesting in this connection to set out the occupations of the fathers of 3626 children seeking employment at the age of fourteen :—

Skilled trades . . .	1122
Labourers . . .	707
Tailoring and clothing . .	544
Commercial . . .	329
Teamsters and drivers . .	409
Factories . . .	228
Independent business . .	123
Professional . . .	57
Miscellaneous . . .	107
Total	<u>3626</u>

Again, out of 6017 children questioned, 38 per cent. were found to be the eldest of the family, while 11 per cent. were the youngest. In 73 per cent. there was a father or stepfather ; in 23 per cent. the mother was the head of the household, the father being either dead or a permanent invalid.

The indifference of the parent to the question whether his or her child should continue at school or seek work, was a very common factor in the problem, thus :—‘ Bessy might just as well be wearing her shoes out in going to work as in going to school.’

The establishment of pre-vocational training in many of the cities had changed the outlook of many of the children who had professed to be ‘ tired of school.’ It should be mentioned, in this connection, that throughout the United States the children are allowed far more liberty to determine their own future, educationally and otherwise, than is the case in England—and this, not only with regard to remaining at or leaving school, but also with regard to selecting their own course of study while at school. The Vocational Bureaux, however, in all the cities where they have been established have done valuable work in influencing parents as well as the children themselves in favour of staying at school :—

(1) By insisting on the value of a continued education, and specially of an industrial education, up to a later period, (2) by showing how poor are the situations available for children between fourteen and sixteen.

Here follows another table, published recently in one great city, setting out, in the case of 6082

children (1) the age at which they have left school,
(2) the grades (or standards) reached on leaving :—

Number.	Age.	Grade in Ele- mentary School.	Period in High or Continuation School.
253 left at 13		In various grades.	
3641	„ „ 14	595 in 6th	82 left in 1st year.
		858 in 7th	15 „ „ 2nd „
		761 in 8th	
1506	„ „ 15	165 in 6th	111 „ „ 1st „
		222 in 7th	40 „ „ 2nd „
		762 in 8th	
515	„ „ 16	29 in 6th	67 „ „ 1st „
		47 in 7th	48 „ „ 2nd „
		268 in 8th	
121	„ „ 17	3 in 6th	18 „ „ 1st „
		10 in 7th	24 „ „ 2nd „
		47 in 8th	19 „ „ 3rd „
46	„ „ 18	6 in 7th	5 „ „ 1st „
		6 in 8th	10 „ „ 2nd „
			1 „ „ 3rd „
			18 „ „ 4th „

6082

N.B.—It should be explained, for the benefit of English readers, that there are eight grades in U.S.A. Elementary Schools, the age beginning at six and ending at fourteen, and that the High School course lasts for four years, *i.e.* from fourteen to eighteen.

Pupils remaining in the Grade or Elementary

School after fourteen are of course backward students, while those entering the High School before fourteen are above the average.

The Vocational Bureaux have, in the course of their investigations, discovered, and in some cases rectified, premature school-leaving. They have the power, acting through the Board of Education, to issue or withhold certificates for employment. It is noticeable that in the city of Chicago, while 13,633 certificates were issued in 1914, after the work of the Bureau was established, as against 13,313 in 1912, yet those to whom such permits were given but who had not reached the 7th grade in the elementary schools were only 38 per cent. of the whole number in 1914, as against 44 per cent. in 1912.

The reason for this decrease is probably three-fold :—

- (1) Pressure by the Vocational Guidance Board on parents and children to keep the latter at school longer.
- (2) Difficulty in finding employment.
- (3) The establishment of pre-vocational or industrial classes in the 6th, 7th, and 8th grades in several schools in the city.

The following are two tables showing 'first situations' obtained by 2471 boys and 2163 girls in Chicago :

2471 Boys

Nature of Occupation.

Office	450
Factory	229
Department Store	159
Printing (errand)	237
Engraving „	72
Tailoring „	66
Manufacturing	24
Electrical (errand)	21
Machine shop „	19
Miscellaneous „	495
Telegraph messengers	225
Street trades	23
Wagon boys	87
Machine shop	64
Tailor shop	63
Printing shop	60
Farm work	14
Bakeries	14
Apprentices	62
Labourers	38
Miscellaneous	49
Total	<u>2471</u>

2163 *Girls*

Nature of Occupation.

Office	440
Department Store	273
Factory	474
Tailor shop	171
Novelty Shop	106
Clothing (ready made)	147
Bookbinding	129
Engraving Shop	25
Press Clipping	18
Dressmaking	152
Millinery	51
Telephone Operating	13
Domestic Science	101
Laundry Work	17
Clerks in Small Shops	29
Miscellaneous	17
Total	<u>2163</u>

In this same city of Chicago in 1914, 23,000 boys and girls between fourteen and seventeen were recorded as 'not in school,' while 15,000 permits to work were issued, to which should be added 3500 issued during 1913, in the course of which year the work was started. This leaves 4500 not at school and not employed. Of this number it is estimated that perhaps half are kept at home to help in domestic service. The serious residuum of 2250 are not

accounted for, and are probably idling in the streets. It is confidently expected, however, that when the work of the Vocational Bureau is more widely established the number of wastrels may be reduced to a minimum.

CHAPTER XII

CHILD LABOUR—II

THE beginning wage in most cities for boys under sixteen is \$3.50, *i.e.* fourteen shillings and sixpence a week. Boys over sixteen earn in the more lucrative occupations from \$6 to \$8, *i.e.* from twenty-five to thirty-three shillings and sixpence a week. Girls under sixteen receive on an average about \$3 or twelve shillings and sixpence a week ; over sixteen in the better paid trades about the same as the boys. These seem big wages to English minds, but the price of living is of course higher in the U.S.A. than in this country.

About 52 per cent. of all children under sixteen in Chicago are employed in the following nine industries :—

- Department Stores.
- Confectionery.
- Soap trade.
- Printing (errand).
- Metal trades.
- Telegraph and Telephone Companies
- Boot and Shoe Manufactories.
- Paper Box Making.
- Clothing.

The most serious feature in the work of boys and girls under seventeen in the United States, as in Great Britain, is that they are employed largely in blind-alley occupations. For instance, in the printing trade, far more errand boys are employed than can ever become apprentices, while work other than errand-work offers even less advancement.

In Cincinnati the Vocational Bureau has managed to get into its hands the monopoly of the employment of telegraph boys, and a law has been passed, under the provisions of which these boys are forced to attend the High School for a certain number of hours a week.

Nevertheless, as a whole, the training of boys between fourteen and seventeen, even with the safeguard of permits to work on the one hand, and the opportunity of getting a free education up to eighteen on the other, offers a serious problem for the future of American Industry, and the welfare of American citizenship generally. What a much graver problem it presents in England, where free education for the great mass of children has hitherto ceased at the age of fourteen or earlier, need not be emphasised. At an age when the whole human organism is undergoing great change, physical, mental, and moral, the State throws off all responsibility for the future destiny of the great mass of

84 AMERICA AT SCHOOL AND AT WORK

its citizens. Though Mr. Fisher's epoch-making Bill has been welcomed by every thoughtful educator, yet there are evident signs that it would have encountered obstinate resistance if war had not so glaringly enforced its necessity by the exposure of national shortcomings.

But even in the United States the danger to the community of producing wastrels is becoming more evident every year in a country which calls for an increasingly large number of trained intellects, to keep pace with the establishment of more and more complex machinery in all departments of human activity.

An investigation into 177 cases of boys who left school between fourteen and seventeen lately in the city of Chicago, produces the following figures :—

At the end of two to five years after leaving school—

27	had	had	1	job.
36	„	„	2	jobs.
41	„	„	3	„
36	„	„	4	„
25	„	„	5	„
5	„	„	6	„
5	„	„	7	„

while two boys had had twelve.

Another set of investigations showed that 30 per cent. stayed only one month in their first situation,

13 per cent. two months, 9 per cent. three months, while only 6·3 per cent. remained as long as twelve months. The reasons given for leaving may be scheduled as follows :—

' Laid off,' <i>i.e.</i> ' not wanted '	41·1
' Wages too low '	10·5
' Discharged '	8·5
' Got a better place '	7·3
' Work too hard or too heavy '	7·1
' Hours too long '	1·7
' No chance for advancement '	2·4
' Ill and not taken back '	3·3
' Left to learn a trade '	·5
' Returned to school '	·7
' Needed at home '	1·9
' Went to business college '	·2
' Family moved elsewhere '	1·2
' Work too far from home '	·3
' Did not like the master '	·9
' Strike '	·4
' Fight '	1·4
' Conditions bad '	·8
' Injured in work '	·6
' Miscellaneous '	1·1
' Wanted a holiday '	8·1

100·

An analysis of the list goes to show that only 8 per cent. of the whole left to 'better themselves.' This is a startling result, and suggests very grave conditions, which might well be laid to heart by English

statesmen. For if the United States, with the advantages of high wages and little extreme poverty, have to confess to such a record of wasted humanity, what has been, and is to be, the condition of England, with her low wages and her high percentage of population always on the brink of starvation ?

There is only one remedy—one which is gradually being applied by all the most progressive States in the Union—the introduction of compulsory education up to the age of sixteen. At present most State legislatures have offered the opportunity of a free extended education up to the age of sixteen to all citizens, but hitherto they have refrained from bringing the principle of compulsion to bear. The few that have done so have reaped the benefit, which has returned a hundredfold into their bosoms through increased prosperity and increased good citizenship. England has hitherto flung off her responsibility for all but a few promising children, who at the age of twelve to thirteen are expected, by the clumsy and (at that age) abnormal machinery of examination, to show the promise that will make their future education after fourteen ‘worth while’ and reproductive.

Apart from the impossibility, on biological considerations, of discovering talent at that age, and the probability that the wrong scholars will in a large measure be selected (for the higher the organism the slower the process of development) the State owes to

all her citizens the duty of providing an equal opportunity for education, not to a few only but to all. No country can expect to march permanently in the front, unless it provide equal opportunities to the whole mass of its citizens. The solution therefore of the problem of compulsory education for all up to sixteen, combined with the apparently conflicting problem of how to raise the wages of labour to such an extent as will prevent the necessity of the employment of child labour, would appear inseparably intertwined with the future prosperity and progress of British industry.

CHAPTER XIII

VOCATIONAL SCHOOLS IN ST. LOUIS

ST. LOUIS is educationally interesting from the fact that it provides examples of vocational training in three ascending stages.

The Franklin Grade or Grammar School, presided over by a Lady Principal, offers a pre-vocational course both for boys and girls between the ages of ten and fourteen. Manual work occupies one period daily, and the teachers are trained to study carefully the powers and tendencies of each student, and hold weekly meetings when the future of their pupils is discussed.

Education in Missouri not being compulsory after fourteen, indirect pressure is brought to bear on parents to extend their children's training by a High School course. Woodwork, elementary cabinet work, art work, and domestic science of all kinds, are taught in the Franklin School, while commerical subjects, including typewriting and stenography, are part of the curriculum. The aim of the school is to make the pupils themselves feel that there is a close connection between what they learn at school and

their life work ; for the same tendency exists in St. Louis as has already been indicated in the United States generally, viz., that children have more voice in the question of pursuing or dropping their education than the stricter control exercised by parents in England would permit. On the other hand, the high wages obtainable by parents do not force boys and girls into premature work for a livelihood in the same degree as obtains in England, where the low wages of unskilled workpeople necessitate the employment of children as additional breadwinners.

No language except English is taught in the Franklin School, but on this subject special stress is laid, since the school lies in a quarter of the city where the foreign element is very considerable. Probably 60 per cent. of the pupils are children of parents who have not been twenty years in America. The great and engrossing problem therefore, continually facing the authorities here as elsewhere, is how to make these children American citizens in the speediest possible time. The American flag is continually in evidence, and the English lessons are so chosen as to bear largely on loyalty and patriotism. The children are taught daily to repeat the refrain ' One country, one language, one flag.' History, Geography, Arithmetic, Writing and Spelling form the other chief subjects of study, and recitations (*i.e.* set

lessons) in the two first, are continuous throughout the day.

The Central High School, with a manual training course for boys and girls between fourteen and eighteen shows features of exceptional interest. The school, which numbers 1400 boys and girls, has a complete system of manual training. But apart from this, it undertakes to instruct for one day in the week, a special number of youths who have already become apprentices in the printing trade. These part-time or semi-attached students number at present about 60, and are divided into five groups, so that about a dozen attend school in sets on each of the five school days. This scheme has been worked out by an agreement reached between the Ben Franklin Club, representing the employing printers, the Typographical Union No. 8 (of the Trade Unions), and thirdly the Board of Education. The employers pay wages to these apprentices for the day during which they are at school.

The principal of the High School, with whom the writer, after an inspection of the practical work, had a long interview, claims that the results of the scheme have been remarkable on the moral and manners of the apprentices, notwithstanding the fact that a more or less considerable gap of time has generally elapsed between the period at which they

have left the grade or elementary school (fourteen), and that at which they return to the High School during their apprenticeship as printers. The age of these apprentices varies between sixteen and twenty-six. Their personal appearance is greatly improved by the fact that they have to mingle with members of the regular day school ; their self-respect, quickened intelligence, mental, moral, and spiritual attitude are thereby visibly increased.

The daily sessions are as follows :—

1. Shop work, Typesetting—two and a half hours.
2. English—its interpretation and appreciation, as bearing on the printing trade, also its business uses—two hours.
3. Civics and industrial problems—three quarters of an hour.
4. Design, as bearing on the printing trade—two and a half hours.
5. Shop Mathematics and Book-keeping—one hour.

The course of study lasts for five years.

The David Rankin Trade School. This school has been munificently endowed with the sum of \$3,000,000 (£600,000) by the man whose name it bears. It numbers 225 students in the day time and 700 at night, and is elaborately equipped for instruction in cabinet-making, concrete and cement work, bricklaying, painting and decorating,

patternmaking, plumbing, machine-shop work, applied electricity, steam engineering, architectural drafting, machine drafting, sheet-metal pattern drafting, and applied mathematics.

The whole expenditure on the building and equipment is found out of income, so that the original endowment of \$3,000,000 remains intact. The course extends over two years, and every student is charged \$30 a year for wear and tear, damage to tools, etc. Otherwise the course is entirely free, and even the students' lunch at school is partly paid for out of income, so that the poor boy is not debarred from attendance.

A visit to the school and a long discussion with the acting principal revealed a benevolent attitude towards the school on the part of the Trade Unions. The school authorities, who, being officials of a privately endowed school, are not under the control of the Board of Education, have been particularly careful not to use the products of the students' work for commercial purposes, except for the equipment of the school itself. The plumbing trade alone, as in similar institutions elsewhere, still maintains a silent objection to the scheme of instruction given in the Trade School. In St. Louis, however, there is no active opposition. The acting principal, who has been a trade unionist himself, is of opinion that much of the suspicion which exists toward similar founda-

tions in other cities may be traced to the want of mutual sympathy and temperament between academic authorities on the one hand, and the tradesmen on the other, the former being often too stiff and unbending in their outlook, while the exponents of the Trade Unions, conscious of their educational ignorance, are apt to betray a certain fear and aggressiveness. The principal looks forward confidently to the time when the old academic prejudice in favour of college training and the distrust of anything educationally utilitarian will have passed away, and the good understanding between vocational training as given in the Schools and the Trade Unions will be more and more pronounced.

CHAPTER XIV

SCHOOLS IN DENVER

THE capital city of the State of Colorado possesses educational features similar to, but not quite identical with, those presented at Los Angeles and San Francisco, which will be dealt with in the following chapter. The High School system here, as in California, receives its full development. Education in Colorado is compulsory up to the age of sixteen, and owing to the prosperity of the State generally (derived from its vast mineral and agricultural resources), and of the city in particular, there is little temptation on the part of parents or children to evade this legal prescription.

Besides the four High Schools, North, South, East, and West, which offer the usual academic courses, the Manual Training High School has a curriculum which fits students generally for the various industries, and is splendidly equipped with forge, foundry, pattern-making apparatus, and chemical and physical laboratories. The manual course is progressive, starting from elementary wood-work and joinery (with drawing) in the first year, forge

work, drawing and physics in the second, and ending with chemistry, drawing, machine shop, and some elective technical work in the third and fourth. Half of the total weekly periods are given up to book work, viz., English, German (except in the first year) and Mathematics.

All the schools in Denver are co-educational.

Two distinguishing features in the school system of Denver deserve particular notice :—

1. The Trade School, attached geographically to the North Side High School, though not an organic part of it.
2. The Opportunity School.

1. The Trade School, which was started six years ago at the same time as North Side High School, offers at present courses in only three special industries—plumbing, carpentering, and printing, though with fuller development the authorities look forward to including in their operations the building and other kindred trades.

It should be noted in this connection that there are at present few manufactures in Colorado, and that this Western city sends its raw material, consisting of gold, silver, zinc, lead, and tungsten, as well as its rich agricultural produce, to be treated in the Eastern States.

Experience has shown that no opposition has been

encountered from the Trade Unions in the operation of this Trade School, though individual prejudices have been covertly shown (as in St. Louis) in the plumbing trade. Ninety per cent. of the printing required by all the other high schools in Denver is done in this school, as well as a large proportion of the cabinet work required, *e.g.* lockers, cases, carpenters' benches, etc., etc.

A discussion with the principal of the Trade School showed that an energetic and successful attempt has been made in this school to solve the difficulty of finding instructors who can teach successfully the trades above-mentioned, and indeed trades in general within the school precincts. The mere academic instructor who has had no experience as a practical workman in the shop or store has been proved useless. On the other hand, the practical workman, however skilled, who has had but little educational training, has been found unable to impart his skilled knowledge to the best advantage, and is therefore an unsuccessful instructor. The problem is solved by selecting past graduates of the school itself, who have had two years at least at work in the actual trade shops, and whose capabilities as leaders have been tested in the course of their past academic career. These selected teachers undertake to improve their teaching capacity by attendance at night classes in pedagogy. The only real difficulty

is that the wages offered to instructors are often inferior to those secured by the skilled workman in the shops.

(2) The Opportunity School at Denver is said to be an institution unique in the United States, and is especially interesting as it throws overboard all the formal systems which go to make up educational practice even in a country like the United States, bold as it is in educational experiments.

Briefly, this school supplies an educational refuge for all those sorts and conditions of men, women, and children who are not catered for by any other institution. It disregards, in admitting students, age, qualifications, and even set hours of the day. Boys in offices, young women in service, blind men, cow boys, foreigners, indeed all who can snatch brief periods of time from their ordinary work come here to improve their condition in life. The writer paid two visits to this school, and noticed the stream of men, women, and children pouring into its doors at all hours of the day. Only started in September 1916, but presided over by a woman of genius, who had already shown her worth in other educational fields, the school has attracted the astonishing number of between three and four thousand students since its inception. The city authorities, who, unhappily for Denver, are said to have checked local

educational progress in other quarters through political bias, seem to have agreed in recognising the wonderful success of this unique institution by supporting it with municipal funds raised by taxation.

The Opportunity School certainly opens the eyes even of the formal educationist, who is accustomed to look on education as a thing confined to youth. It emphasises the immense gap between the formal education of the past (both in England and in those parts of the United States which have inherited English traditions), and the practical training for life-work, which modern vocational instruction attempts to bridge by the introduction of manual training schools, trade schools, corporation schools, and the like.

But the Opportunity School at Denver has effected an even more surprising revolution. It has visualised the limited outlook of all previous systems as regards age, educational qualifications, and set hours, and has boldly undertaken to fill the gap. Formal systems, on whatever basis they are founded, do not profess to be responsible for the adult citizen, or for the waifs and strays of life. The Opportunity School on the other hand recognises no limit in its educational sympathies. It sets out to repair all educational deficiencies, which parental neglect, lack of opportunity, and failure to seize previous opportunities, have left in the life of the citizen,

however young, or however old. It helps and cures the educationally lame, blind, halt, and maimed. Thus it goes further than foundations like the Pratt Institute, where the principal aim is to render more skilful and efficient the workman or woman already engaged in settled occupations.

But this school not only supplies instruction of all sorts for all sorts of people ; it also undertakes, and with conspicuous success, to find employment for its transient students. It is in fact a placement bureau, and is sought after by employers of all kinds.

Concrete cases will best serve to illustrate this new departure in the sphere of educational experiment,—cases which actually came under the notice of the writer. It will be seen that they embrace a remarkably wide range.

1. A cow boy aged twenty-seven began to attend this school. He had only reached the fifth grade in his elementary school as a boy. He is now taking sixth, seventh and eighth grades, correlating algebra, geometry, English, history, science. He asks his teacher to take walks with him when not in class, and talk to him about subjects he ought to know.

2. A boy aged sixteen, employed in a small grocery store at \$3.50 a week, has increased his earning capacity to \$12.50 after attending two hours a day for a month, and taking arithmetic, English, and mechanical drawing.

3. An Austrian girl, knowing nothing but her native tongue, has taken English, and has now secured a place as nurse in the county hospital. The sewing department of the school devoted several days to making her outfit.

4. Two blind men have attended the school for some months, one learning salesmanship, the other typewriting and the dictaphone.

5. There is a class for defective speech—students in this class have been in inferior positions on account of this defect, and have rapidly secured better situations.

6. A large number of men and women attend evening classes in one or more special subjects in order to be more efficient the *next day*.

7. Many entirely uneducated older people obtain the rudiments of an education in the school bit by bit.

8. The citizenship class composed of aliens numbers four hundred and fifty pupils of all ages, and its members are trained to become real American citizens.

Free evening meals are provided for boys who work all day for small wages and live a long distance from the school which they attend in the evening. This help enables them to come directly from work to the school without losing time.

There is a close correlation, as will be seen, of

school work with everyday life. Students 'function' their school knowledge through its school store,—its automobile shop, its adding machine, its typewriters, its cash register—all in the school. For example, in the school store the pupil dictates to the stenographer who comes from the commercial department. These letters are criticised in the boys' English class. Again the automobile school prepares the student on certain days for practical work in his automobile shop where he is working, by giving him an engineering and mathematical course.

The following classes have been organised and others are being formed when demanded: Cooking, sewing, millinery, hair-dressing, automobile repairing, electricity, bookkeeping, typewriting, shorthand, salesmanship, dentistry, mechanical drawing, woodwork, shop arithmetic, etc.

There are of course no school fees. The school is built on the principle, 'If you don't see what you want, ask for it.' It is re-educational in the best sense of the word, and if the old or the young has missed life's previous opportunities it gives him the chance of a new start.

CHAPTER XV

CALIFORNIAN SCHOOLS

THE State laws of California prescribe compulsory education for boys and girls up to the age of sixteen. It is not surprising therefore to find that the high school system finds its highest expression in the Far West.

This is strikingly evident in Los Angeles. This city, extraordinarily favoured by nature, and enjoying an equable climate all the year round, has gathered to itself a population which is increasing by leaps and bounds. Moreover, a larger proportion of the inhabitants than in most cities are of independent means, and can therefore afford to keep their children at school for a longer period than in communities where boy labour is demanded by the necessity of adding to the parental earnings. It may be surprising to an Englishman accustomed to the comparatively slow growth even of the most prosperous cities to be told that within five years the population has increased from 300,000 to over half a million, *i.e.* 60 per cent., and that it is the largest city in California, having outstripped by a

small margin its great rival in the north — San Francisco. Moreover, its charming surroundings, its fertile soil, and its oil fields have attracted the rich men of the Eastern States. Perhaps nowhere in the whole United States is there so much wealth concentrated as in the suburb of Pasadena — the winter home of millionaires. The general trading population, although the city can boast of no great manufacturing industries, are optimistic to a degree uncommon even in America. They have an intense belief in the value of education, and especially of vocational training for the youth of both sexes. The city authorities have been lavish in their expenditure, and grudge nothing which they think can conduce to the successful development of their young citizens.

The principal high schools of the city are the Academic, the Polytechnic, the Manual Arts and the Jefferson, as well as the Gardena, which specialises in agriculture, and the San Pedro, which provides courses for Marine Engineering. All these are comparatively recent institutions, not one of them being more than ten years old. The Jefferson, indeed, which is the most elaborate of all, only opened its doors in September 1916. Nearly all are co-educational, and are 'accredited,' *i.e.* they have a right to pass on into the University of

Southern California any of their pupils on the 'mere motion' of the principal.

The writer made a complete survey of all these institutions, and after careful study is prepared to maintain that nowhere else in the United States is so much educational ground covered, more varied courses offered, or bolder experimentation ventured on than in the high schools of Los Angeles.

The Polytechnic and Manual Arts each number more than 2300 pupils, and are unable to admit the crowd of students that offer themselves for admission. These two institutions cover to some extent the same ground, and offer commercial, as well as more general vocational courses. The Polytechnic High School provides courses in electricity, mechanical engineering, architectural drafting, assaying, advertising, salesmanship, interior decorating, costume designing, and commerce. The Manual Arts High School has no less than ten alternative courses, which prepare students in agriculture, art, engineering, literature, music, the natural sciences, social science, commerce, home economics, and the mechanical arts. Forges, foundries, pattern shops, printing machines, art metal models, experimental farms, cabinet-making rooms, botanical and zoological departments, and cooking rooms, have all been supplied with the most lavish disregard of

expenditure. In both schools there is complete self-government among the students, who possess property of their own, gained by their own handiwork, to the amount of £10,000.

It must not be supposed, however, that manual work monopolises the whole attention of the pupils. Half the school time is occupied with book work, while physical training, which is interpreted in what would seem to an English educationist a very broad sense, and includes base-ball, is taken out of the periods set apart for the manual arts.

The Jefferson High School, though only opened in September 1916, and originally intended for agricultural training, offers all the courses and almost all the subjects above mentioned. It is equipped in a style even more elaborate than the other two, and though only half built, promises to be one of the most successful of all.

The Gardena High School, which is theoretically a preparation for the agricultural colleges, has special points of interest. It was started confessedly as an experiment, and has been developed by the energy and ability of its principal. Agriculture, chemistry, physics, and biology, are of course among the subjects of study. Half the

time of the students is spent on the scientific study of agriculture indoors, and half the time out of doors, which in the favoured climate of Southern California is possible throughout the year.

It is significant, however, to discover that only one out of nine students become practical farmers, possessing land of their own. The pupils, who are not allowed to enter until they have passed the 8th Grade of the Grammar or Elementary School, and whose ages range from fifteen to twenty, are led to choose the agricultural course (according to the principal's analysis) for a variety of reasons, a sentimental desire for an out-of-door life being really more prominent as a factor in choice than a passion for farming. It was observable that city bred boys who go through the course rarely become farmers ultimately. They discover that there is not 'money in it,' i.e. that the intensity of the work, which lasts seven days in the week, brings commercially no adequate reward. Moreover, the farming instinct seems to be, beyond all other avocations, of a hereditary character, and the city bred boy can rarely acquire it. It is significant also that there has been an increasing difficulty during the last quarter of a century, which has affected the extreme west and which militates against farming as a vocation—a difficulty from

which England has suffered for centuries, namely, the aggregation of land in the hands of a few rich men, who have bought out and crowded out the small farmer.

The Principal of Gardena informed the writer that the large majority of students who pass through the agricultural colleges become either managers of rich men's estates, or professors and teachers of scientific agriculture. In other words, the touch between the practical or empirical and the scientific has neither been complete nor effective.

America is suffering from the movement which has for a long period affected the prosperity of landed interests in England—the influx of the great mass of the population from the country into towns. There is no extensive system of small proprietorship, either in the United States or in England—a system which will probably leave France stable and comparatively unaffected by the upheaval of the war, but which will, the writer ventures to prophesy, dislocate the social political condition both of America and Great Britain. The Principal of Gardena held that no system of land tenure can be healthy which is one of tenant-farmership. The joy and pride of possession is the one thing which compensates for the comparatively small financial profits of the farmer's life.

THE INTERMEDIATE OR JUNIOR HIGH SCHOOL

Any account of the school system in California, and particularly in Los Angeles, would be incomplete without a reference to the position occupied by the Intermediate School, which forms the peculiar feature of Californian education.

The Intermediate School, one of the most prosperous and highly developed examples of which (in 14th Street) was visited by the writer, bridges the gap between the Grammar or Elementary and the High School. Boys and girls are moved on to the Intermediate School in the seventh year of their school life, *i.e.* from twelve onwards, and stay in that institution during their eighth and ninth year, *i.e.* up to the age of fifteen.

The work done in these schools, which are otherwise known as 'Junior High Schools,' may be called pre-vocational. Courses in several of the manual arts are offered, and all students are obliged to pass through three of these courses at least with a view to discover their special aptitude, and they graduate in the one in which they show themselves most proficient. It will be seen how this pre-vocational training, together with the fact that education is compulsory in California up to the age of sixteen, acts as a check against the blind alley occupations into which boys and girls in England, and elsewhere in America,

drift at an age when the State disclaims further responsibility for their education.

Nevertheless one of the ablest professors in the Polytechnic High School informed the writer that in spite of these precautionary safeguards, boys even thus favourably placed tend to drift into waste occupations, even as late as the age of seventeen. He attributed this to the fact that verdicts as to the different aptitudes of the students were reached after too short a diagnosis. Moreover, much had still to be done in studying the ratio between demand and supply in the various industries in different localities. Sometimes boys were led into a vocation which was already overstocked through a want of touch between the teaching profession and the traders or manufacturers. This confessed deficiency goes to prove that things educational are still in the state of experimentation even in such progressive communities as that of Los Angeles.

To return, however, to the Intermediate or Junior High School. Though in California these schools have taken firmer root than elsewhere in the United States (there are for instance eight in the city of Los Angeles alone) the system is at work in some parts of Ohio, and in Illinois, in Richmond (Indiana), in New York, and in the educationally progressive communities of Rochester and Buffalo.

The ideals of schools of this character are not

merely to provide an earlier introduction to pre-vocational work, but also by 'exploration' to give an opportunity to the pupil to find his *métier*. Their establishment seems to have come from the Board of Education in Los Angeles, as inspired by the former superintendent, who was convinced that these Intermediate Schools would check premature closing of the school life and afford greater educational opportunities to the pupil by the substitution of 'departmental' for the 'general' elementary school system, and also by securing the services of a greater number of men and fewer women teachers, a large proportion of the former being college graduates.

In the 14th Street Intermediate School of Los Angeles, for instance, out of thirty-two teachers on the staff, 67 per cent. were teachers in only one subject, twenty-seven in only two, while only six were instructing in more than two. There is, moreover, a system of 'class advisers,' the equivalent of the English 'tutor,' who are each responsible for the well-being and work of a certain number of students assigned to them respectively. From an intensely interesting set of questionnaires sent out lately by Dr. Briggs of the Teachers' College in Columbia University, who has made an exhaustive survey of the Intermediate or Junior High School System, it would appear that the general educational system of these schools is being influenced far more strongly by the High

School above them than by the Grade or Elementary School below them. This phenomenon is particularly interesting as it corresponds so exactly with a similar experience in England, where the Secondary or Public School is dominated by the ancient Universities, and the Preparatory School in its turn by the Public School.

CHAPTER XVI

CALIFORNIAN UNIVERSITIES

IN San Francisco the chief educational interest is centred in the universities rather than in the schools. Unlike Los Angeles, which, partly owing to the wealth and prosperity of its citizens, and partly to the exceptional activities of its authorities, has shown originality in educational experiments, the schools of San Francisco seem to have suffered from the fact that politics have interfered in the sphere of education, and checked any great forward movement. A notable exception, however, is found in the case of the Technical High School at Oakland—a town which can be reached from the Central City by a short sea passage.

This school presents features of unusual interest, and has had a romantic history. Started through the enterprise of an educational pioneer, Mr. Fischer, to provide vocational training, with a four years' course, for boys and girls from the elementary school age (fourteen or fifteen), it had to face considerable opposition in its earlier days, about twenty years ago, from the city fathers, who saw no value

in pursuing education for future workers beyond the age of fourteen. Later on, there was some opposition on the part of the Trades Unions, when it was discovered that the school provided not only manual training, but also a substitute for trade apprenticeship. In spite of these obstacles, however, the school has gradually worked its way into such public favour that magnificent buildings have been erected by means of bond issues, while the town of Oakland gladly pays taxes for its upkeep. Its four years' course offers six different courses—academic, mechanical mining and civil engineering (both of these preparing for the University of California), commercial, industrial (including all the manual trades), home economics, and, finally, a mixture of these three last. All these courses have many divisions, which are saved from being 'soft options' by consultations with parents and by the insistence on thorough instruction by the school authorities.

The school is magnificently equipped with physical and chemical laboratories, forge, foundry, pattern-making shop, cabinet-making shop, etc., etc. It numbers one thousand girls and nine hundred and fifty boys.

The fusion of students of different aims and professions is the characteristic of the school, and a dead set is made educationally against segregating in

different establishments those students whose careers in life are destined to lie far apart.

With the exception of this Technical High School, however, the schools of the city and its neighbourhood do not seem to have been greatly influenced by their propinquity to the two great Californian Universities, wonderful as these latter are in their machinery and equipment. As has been hinted above, the invasion of politics into the sphere of education has probably exercised a baneful influence.

The University of California at Berkeley and the Leland-Stanford at Palo Alto are in no sense local institutions, but have been as cosmopolitan as San Francisco itself, drawing their clientèle from all parts of America. Nor is the reason far to seek. Owing to the magnificence of their endowments, both of them offer an education in every department of human knowledge at practically no cost to the student. They have therefore attracted pupils from all parts of the world, and though San Francisco and the State of California are proud of possessing them, the universities themselves have little or no local colour.

The wealth of both these institutions is to an English mind staggering. The Leland-Stanford University, which occupies a beautiful position in

the foothills near Palo Alto, about thirty miles from the Central City, is the bequest of a railroad king, who bestowed his name upon it. He is said to have spent the gigantic sum of six million dollars in building the university and endowing it. The buildings are magnificent. Huge quadrangles, with a Byzantine Church for all the Christian denominations standing in the centre, countless lecture rooms, theatres and class rooms for every conceivable department of learning, strike the beholder with bewilderment. Agriculture alone has not been made a direct subject of study. The geological wing is probably unique, not only in the U.S.A. The engineering shop occupies many acres. There are forges, foundries, pattern-making departments, printing shops, mathematical class rooms (pure and applied); and zoological, botanical, biological, physical, chemical departments are all richly provided for. It is small wonder that this University attracts students from all parts of the globe. They are as a rule older than those who attend the universities in the Eastern States, and far more advanced in age than the students at European universities. The explanation of this is interesting. The University is in the closest touch with all the chief industries and manufactures, the heads of which send the most able of their employees to take courses in all practical arts. In the Campus men

of thirty, forty, and even fifty were to be seen. Nevertheless, in spite of the lavish equipment and upkeep, the expenditure of which is estimated at a million dollars, the income of this institution is only half spent, the other half being used as capital.

The University was begun about 1885, but hardly a year passes without substantial additions being made to the building.

The professors' stipends range from \$1000 (£200) to \$5000 (£1000) a year—\$4000 (£800) is the average payment to (say) a dozen out of forty professors.

The University of California at Berkeley is twenty years older than its rival. Indeed its foundation dates from 1854. It is distinguished from the Leland-Stanford in being a State and not a private university. With an endowment very inferior, it depends partly for its income on State taxation, but on this it is practically able to draw at will. The site chosen exceeds in beauty even that of its rival, and the buildings, instead of being erected on a preconceived plan, have grown up in the course of years, and are dotted over the landscape. The wealth lavished here on educational equipment of all kinds is astounding to an educationist from Great Britain, who is accustomed to the parsi-

monious and cheese-paring policy of his own Government, and to the seemingly ingrained reluctance of his countrymen to look upon education as the most valuable of all national assets.

The University of California, in addition to all the other departments of learning for which it is equipped on even a bigger scale than the Leland-Stanford (for it has 7000 students as compared with 1500) makes a speciality of agricultural training. But the Professor of Education informed the writer that out of the five hundred agricultural students not more than 40 per cent. actually take up farming. The most promising of them become professors of agriculture in other parts of the United States.

The Professor was, however, of opinion that the problem connected with the aggregation of large estates was being solved, and that in California at any rate farming was a really lucrative occupation.

This University at Berkeley is famed particularly for its Greek Theatre (the gift of Mr. W. H. Hearst, of newspaper celebrity) which was apparently copied in 1902 from the original Greek Theatre at Bradfield College, in Berkshire, England. It holds eight thousand people.

Both the universities are co-educational, but, in

the case of the Leland-Stanford, the female students are limited by statute to five hundred. There is no such limit at Berkeley, as the State prescribes none, and the female students at present number 40 per cent. of the whole.

CHAPTER XVII

AGRICULTURAL EDUCATION

THE Act of Congress, known as the Morrill Act, which was passed in 1862, and amended three times within the following twenty years, gave the first impulse to scientific agricultural education in the United States.

This Act granted to each State 30,000 acres for every Senator and Representative whom the State sent to Congress, the number of Senators and Representatives being assigned to each State in proportion to population. This allocation of acreage assumed different forms in the various States. The Agricultural States, where there was a large amount of unoccupied public land, took up the whole of the acreage. But in States where the population was large and private ownership was more common than public ownership, land scrip was issued, and this scrip could be bought by individual purchasers. Land could also be acquired by private persons in other States where public land had been appropriated to a smaller extent.

Twenty-eight States had, up to 1912, been allotted,

under the operation of the Act, 8,160,000 acres of land in scrip, while twenty had received 2,890,000 in actual land, making 11,050,000 in all.

The scrip and land thus acquired have been from time to time sold for a total price of \$12,664,545,700, which has increased in 1917 to about \$14,000,000,000. This enormous fund has been invested, and the income has been applied for the support of agricultural (and mechanical) colleges.

Of the colleges which have benefited under the Morrill Act, four States—Kentucky, Mississippi, South Carolina and Virginia—support, by means of the income derived from the Act, one Agricultural Institution for white students, and one for coloured.

Massachusetts possesses two distinct institutions for white students.

Nineteen States support Colleges of Agriculture *in addition to* the State universities.

In twenty-one States the Agricultural College is contained *in* the State University.

In seven States there is an Agricultural College, but no State University.

It will be seen from this brief recital what enormous revenue the various States enjoy for the endowment of agricultural colleges.

The special instruction, however, given in these colleges covers a comparatively small portion of the

total agricultural population of the country. The great mass of the farmers have up to the last ten years been working under the empirical or 'blunt thumb' system, and have known nothing of the scientific principles which should govern their occupation. The reason for this is not far to seek.

The enormous natural resources of the United States, and the fertility of a virgin soil, offered until lately little inducement to the farmers to work under scientific conditions. There has therefore been until lately no great pressure to attend agricultural colleges for instruction.

Various causes, however, have recently aroused statesmen and agriculturists to the necessity of increasing the nation's capacity for producing food. The population of the United States has increased by such leaps and bounds since the Morrill Act was passed, that it has become a serious problem how to feed a hundred million people from the limits of the food-producing districts, enormous as these are. Every year there has grown a tendency for the States to become less and less a self-supporting nation, and if, as has been freely predicted by sober statisticians, the population should reach two hundred million in forty years' time, America will become no longer an exporting but an importing nation, unless by some scientific means the production of food is enormously increased. With this

alarming prospect in view, many practical scientists connected with agriculture have urged the necessity of instructing farmers in more scientific and economical modes of food production. It has been estimated that on an average the wheat-bearing regions in the United States produce only fifteen bushels an acre as against thirty bushels in Germany. Immense efforts have, therefore, been made within the last ten years to extend agricultural instruction beyond the walls of the Institute or Agricultural College.

Last year (1917) the number of students under tuition within the walls of these institutions had been estimated at twenty-five thousand, though no less than twenty-five million people are actually engaged in agricultural pursuits. In other words, only one in a thousand is actually receiving scientific instructions in special institutions.

The methods of instruction employed in 'Agricultural extension' are of a varied character :—

(1) One of the most valuable is 'the movable agricultural school,' which is conveyed on special educational trains from district to district, and which stops where required. Lectures on corn-growing, dairy-work, animal husbandry, the extermination of pests, and domestic science generally, are given by lecturers from agricultural colleges and institutes, while

travelling libraries are carried for book-instruction on scientific farming, and bulletins on the subject are distributed.

(2) Demonstration and experimental work is carried on in 'county' and private farms.

(3) Agricultural magazines are written by the authorities of the different colleges and institutes for distribution among the farmers.

(4) The establishment of farmers' institutes in the different localities is widely spread, and specialists from the agricultural colleges deliver lectures, and give scientific information to members of these institutes.

These specialists on the staff of the colleges are expected to spend one-fourth at least of their working time in extension work.

(5) Vocational work in the primary and secondary schools in agricultural districts is being rapidly extended, while boys' and girls' agricultural clubs are being founded in connection with the schools.

(6) Correspondence courses are also carried on by the College authorities with farmers and students on payment of fees.

To the development of the first four of the above methods of extension work, the local farmers are expected to contribute financially. In most States, no extension work is promised or carried on without such co-operation by the localities themselves.

The qualifications for Extension Lectures include several years of undergraduate and graduate work at the agricultural colleges, and a still longer period of actual farming experience.

The chief difficulty in the way of successful extension work seems to lie in the characteristics of the farmer himself. He is by nature conservative, inclined to look to the past rather than to the future. Accustomed from the peculiarity of his calling to wait on Providence, and to study times and seasons, he is apt to be wedded to empirical methods born of his own personal experience, and to be distrustful of scientific principles when they issue from men who have not had equally long experience. The lecturers, therefore, in order to be successful, must show considerably greater knowledge than those whom they set out to instruct, and must combine personality and leadership with infinite tact and patience. The academic 'prentice hand fails to convince, however great his scientific grasp of general principles may be. It follows that only mature students are fitted for the task of lecturing.

One fact of historical importance must be added. The strongest stimulus towards the development of agricultural extension was given during the year 1914-15, by the first working of the Smith-Lever Act,¹ passed in the previous year. The huge grants bestowed under this Act by the Federal Govern-

ment, were extended to every State working in co-operation with the 'States Relations Service of the United States Department of Agriculture.' The States receiving the grant were to provide 'dollar for dollar' in return for the Federal benefit received. It would be beyond the scope of this chapter to enter into the facts and figures showing the enormous area over which the Act extends. Indeed, its full consequences are still only beginning to be felt throughout the Union : but there is every indication that its universal operation will result in an enormous development of the agricultural output, while it will have still more far-reaching effects in conserving the natural resources of the Agricultural States, thus meeting the problem of feeding the rapidly increasing population. But it will do even more than this. It will have the result of maintaining the economic stability of the United States as one of the greatest exporting countries of the world.

CHAPTER XVIII

CORRESPONDENCE SCHOOLS

THERE is no system of education, however perfect, which can cover all the needs and conditions of every man or woman who wishes to acquire or increase knowledge with the view of increasing his or her efficiency in life-work.

There must always exist also a large section of persons who, through the unfortunate circumstances of a neglected childhood at home, or inefficient or narrow education at school, desire to repair the deficiencies of earlier years. Or again, a man or woman, otherwise educationally equipped, may be called upon to fill some special post, with the requirements for which he or she has had no previous familiarity.

In a country like the United States, where the belief in education as the chief and irreducible asset in life has infected the national blood, it is not surprising to find that education by correspondence, which had its birth in England, has spread widely. The huge extent of the country, and the consequent distance in certain regions between educational

centres, have rendered a system of instruction through the post an indispensable addition to the educational equipment of the nation.

Prosperity therefore has attended the institution of Correspondence Schools all over the country. The drawbacks of the system are obvious on the surface and are freely admitted by its promoters. No instruction by correspondence, however effective, can wholly fill the place of *vive voca* teaching, and 'heart-to-heart' talk. The electric sympathy which exists in a favourable atmosphere between teacher and pupil is necessarily absent.

Moreover, the Correspondence School does not profess to supply an organically educational whole, but to supplement deficiencies. It supplies a gap and prevents vocational leakage.

Another drawback, also freely admitted, is this, that each Correspondence School is independent of every other, and, moreover, is independent of governmental supervision. Some are admirably efficient, others are below the standard. Moreover, while all are conducted as business concerns with a view to commercial profits, the failure of one or two inefficient and 'charlatan' concerns is bound to reflect unhappily on honest and efficient institutions.

But with these obvious limitations and drawbacks, the system has abundantly justified itself as a working power throughout the length and breadth

of the United States. It possesses also this immense advantage, that almost all the students who avail themselves of the courses offered have a serious purpose in life. Moreover, it is a case where a system can be immediately tested by results.

The fact then that these results are in a vast majority of cases satisfactory, is a sufficient justification for the existence of the system.

One of the most remarkable and successful of these institutions—the one with the largest clientèle (with the exception of the parent institution at Scranton, Pennsylvania)—is the La Salle Extension University in Chicago. It has 34,000 students on its books. The chief, though by no means all, subjects on which it professes to instruct are :—

- (1) Law.
- (2) Higher Accountancy and Book-keeping.
- (3) Traffic Management and Interstate Commerce.
- (4) Business Management Generally.
- (5) ' Commercial ' Languages.
- (6) Public Speaking and ' Business ' English.

Like the Opportunity School at Denver, it recognises no limitations of age, educational qualification, or periods of study. It encourages students to fill up the spare hours of home life after work

time, and it is easy enough to see that this occupation of leisure must have an indirectly salutary effect on public morals and good citizenship. Thus it discovers character and inspires it with legitimate ambitions.

American industry, with its use of complex machinery and urgent demand for scientific and progressive manhood, is becoming increasingly impatient of men in the groove. It is not enough for a workman to be steady, honest, and sober. Increasing years, if unaccompanied with increasing efficiency, place him at a discount ; long and faithful service without force go without reward, and dismissal follows lack of progress more pitilessly perhaps in the United States than in older countries. The employing power, whether it be an individual or a corporation or a State department, looks for one thing and one thing only—efficiency. It has come to be recognised that man, if he is to take his place in the greater organism around and above him, must have dynamic force, and that, as he gets older in his work, he must not stop still. He must grow more efficient or less efficient : he must develop or he must shrink. There is no place in the United States for a man content to ‘stand on the ancient ways,’ whether he be engaged in commercial or industrial life.

It is here, more perhaps than in any other point,

that the Correspondence School does its best and most helpful work—and does it well. The progressive commercial and industrial worker has recognised this more keenly in the United States than elsewhere, and the fact that in one institution alone 34,000 students have responded to the help it claims to bestow, is an eloquent testimony that it fulfils a real need in a progressive community.

CHAPTER XIX

WELFARE AND EDUCATION—I

THE problem of watching over the well-being of adolescence throughout the United States has been an increasing study during the last ten years. It has not been left, as in some other countries, to the necessarily sporadic efforts of philanthropic agencies; it has been recognised as part and parcel of the educational function. In other words, a boy or girl is not regarded as having disappeared from the active interests of the scholastic authorities when he or she has left the school. In many States, and especially those in the East and Middle West, it is considered part of the functions of the Headmaster, acting either by himself or through an official specially delegated for the duty, to keep in touch with past students until at least the age of eighteen. Their avocations are duly recorded in books kept for that purpose, and they are encouraged to refer to the school in case of distress or change of employment. 'Once a student,

always a student,' is the doctrine which is inculcated on pupil and principal alike. This sense of responsibility has doubtless grown up *pari passu* with the gradual disappearance of what is now looked upon as the aristocratic tradition (whencesoever inherited) that the Elementary and Secondary Schools were merely two preliminary stages towards a 'college' education, and with the recognition of the contrary principle, that both kinds of schools should be so organised in spirit and in subjects as to fit students, as far as possible, directly for their future work in life.

This recognition has resulted in all sorts of interesting educational experiments in the various States. But the basic idea kept in view by all is that the school is not an isolated entity in the training of child-life, but must be closely linked up with the shop, firm, or office in which the child is to be employed.

It is true that this doctrine has not yet thoroughly permeated the educational atmosphere in all cities and States, but everywhere it is admitted—in principle, if not in fact. It is indeed the most evident feature in all American education, though that education is still in that experimental stage where theory often has outrun practice. But it is unmistakably there—

‘A beam in darkness,
Of which we pray that it may grow.’

In the more progressive centres such as New York, Boston, and the States of the Middle West, practice has not lagged behind theory. Thus, in the Washington Irving school for girls in New York, there is a vocational guidance and placement bureau attached to the school. Elsewhere, as in Chicago (see Chapter XI.), there is a central bureau which gathers to itself what is lacking in this respect in the various schools of the city, and performs temporarily what in future must be their recognised function.

It may be asked by practical educationists on the other side of the Atlantic—How can a Headmaster, even though he acts with the help of a subordinate, fulfil this extraordinarily heavy function in addition to his more immediate duties? The answer is that the Principal of an American school holds a somewhat different position from that of an English Headmaster. On the one hand, he does not exert absolute lordship over his assistants, as in the (so-called) Public Schools of England; he does not appoint them, much less dismiss them, at will, but is, like them, subordinate to the Superintendent of Education in the city or State. His functions therefore are rather those of an administrator than of a ruler. On the other hand, except

in country schools, where the problems are simpler, he has no teaching duties, so that he does not shoulder the heavy burden which falls to the lot of Headmasters of elementary and secondary schools in Great Britain. Consequently he has more leisure to think of the welfare of the student in terms of the future as well as of the immediate present. Welfare work, therefore, forms a part, and in the future will form a larger part, of his educational duties.

The Headmaster in Great Britain doubtless feels, no less keenly than his American confrère, a warm interest in the future evolution of his pupil's life. Nevertheless that interest must, owing to the weight of his immediate duties, partake largely of the nature of a sentiment—an ideal, and cannot be translated into general practice.

It must not be supposed, however, that there is but little welfare work outside the school premises. The very contrary is the case. The energies of philanthropic societies cover a far larger field in America than in Great Britain. Such societies spread through the length and breadth of the land. They invade the field of further educational work to an extent unknown in England, where, however, the night schools are more fully developed than in the United States. But the night schools, excellent as they are in providing stimulus, in keeping the

adolescent from the temptations of the leisured evening, and in providing him with fruitful employment, have obvious drawbacks. The young worker comes to them with a tired brain, and it has become an open question whether the moral advantages secured are not largely counterbalanced by the physiological ill effects on eager and ambitious students. The system seems a double-edged weapon, fitted to wound as well as to protect, and all pedagogic biologists will admit that it is a poor remedy for the premature disappearance of the English boy or girl from the more formal education of the school.

However this may be, there is no doubt that the energies of the philanthropic agencies in the United States, and more particularly of the Y.M.C.A., have taken a wider and more beneficent range than in Great Britain. The International Committee of the Y.M.C.A. has so greatly developed its education department, as to fill up the gaps necessarily left by the fact that a large proportion of youths in the United States leave school work prematurely, notwithstanding that the more progressive States, such as Massachusetts, Wisconsin, and Ohio, prescribe the minimum legal age of leaving school as sixteen.

The educational development of the Y.M.C.A. in the last twenty-five years has been extraordinary.

136 AMERICA AT SCHOOL AND AT WORK

It may be put in the form of a schedule. A few features only are presented below :—

	1892.	1916.
Lectures delivered	460	16,590
Paid teachers and leaders . .	415	2,545
Educational Club Members . .	3,000	29,127
Students inside Association buildings	10,000	66,588
Students outside Association buildings	0	15,770
Employed boys 12-18 (Students)	0	11,724
Students in Association Day Schools	0	7,283
Business men in advanced courses	0	12,350
Students in Bible study in Edu- cational Department	0	2,872
Receipts from students' fees	\$940,912
Expenses (apart from rent, light, and heat)	\$1,143,086

The energies of the Educational Department of the Y.M.C.A. have taken a twofold direction :—

- (1) To discover educational needs of boys and men—
—not by guesswork but by investigating
local conditions, and the actual needs and
abilities of all students.
- (2) To interest the public in the work in all ways—
in print, newspapers, and personal solici-
tation.

But though the Y.M.C.A. has been far ahead of

any other philanthropic agency in organisation and development, yet everywhere in the United States educational welfare work has made tremendous strides. The benefactions of the successful men of wealth in America have happily taken the form very generally of founding and benefiting educational institutions, particularly those connected directly with welfare work. The educationist from Europe reads and observes, with mingled amazement and admiration, the results of the lavish endowments poured into the lap of public educational and philanthropic institutions in the United States—and bestowed not unthinkingly, but with a scientific knowledge of the results certain to accrue from such offerings to the future national welfare.

In spite of much that is deficient in American educational development, much that is low in standard, perhaps more that is crude in experimentation and deficient in realisation, nevertheless the driving force which has prompted these magnificent contributions to the national welfare is stupendous. As it owes its origin to, so it finds its reflection in, the ideals of a people which, since it became a self-governing and independent community in 1776, has consistently regarded education as the one great factor of national salvation.

CHAPTER XX

WELFARE AND EDUCATION—II

IT would be a mistake to suppose that welfare work has stopped short at the schools, or with the organised benevolent agencies such as the Y.M.C.A. General work of the same kind is being carried on in a later stage of educational development by different colleges and universities in a variety of ways in the form of extension work.

Typical social interests, such as health instruction, civic and social centre development, economic questions such as the single tax, the minimum wage, municipal ownership, and scientific agriculture are all covered by the activities of various University Extension Schemes. The University and College authorities, who formerly stood aloof from attempting any such public propaganda, are now energetically engaged in disseminating instruction on all these vital problems.

This work is done in various ways, but not least through

(1) *Correspondence Study*. Thus the University of California at Berkeley gives instruction chiefly in

cultural subjects, and has 464 students with 68 courses.

At the University of Chicago the courses include history and political economy; 13,000 persons have received instruction through the mail, while 125 members of the faculty are employed on the work.

At the Agricultural College of Massachusetts 17 courses on scientific agriculture are offered, while, at the Agricultural College of Michigan, 11 courses on agriculture and 3 on home economic subjects are given.

At the Agricultural College of Kansas an unspecified number of courses are provided. In the State College of Pennsylvania 17,500 students have been enrolled, chiefly for the pursuit of agricultural subjects.

At the State Universities of Wisconsin and Washington the courses are widely vocational, and embrace engineering industries and commerce. Three hundred separate courses are offered at the first-named University, where the University Extension Scheme is probably more highly developed than anywhere else in the United States.

(2) *Lectures to the people* have been organised in most of the above-named States and many cities. The University of Michigan stands out prominently in this mode of welfare work. In the

year 1914 309 lectures were offered by 106 members of the faculty, and the auditors numbered 71,500.

At the University of Wisconsin 135,000 persons were in attendance at lectures given by the University Extension Scheme, of whom 10,000 attended 85 single lectures, and 125,000 the 156 courses provided during the year.

(3) *Local classes* have been inaugurated in Pennsylvania, Illinois, Wisconsin, and Washington, largely for teachers in the Public Schools who wish to pursue their further education while imparting their previously acquired knowledge to others. Thus the intellectual rust and apathy which come from the monotonous repetition inevitable in the teaching of elementary subjects—the common bane of the pedagogic life—are not allowed to settle.

The feature of extension work at the University of Cincinnati is its connection with commercial subjects, and there is a special class of students called ‘auditors,’ who, at a nominal fee, receive instructions which are designed to extend from 8.30 A.M. to 9.30 P.M.

Local classes in engineering are to be found at the Universities of Kansas and Wisconsin. In the latter eighteen instructors and professors devote their whole time to engineering extension work. In the last six years about 8000 students have received instruction in technical courses.

So far attention has been called to the educational side of welfare work in the United States. But 'miscellaneous' welfare work (as it may be called for lack of a comprehensive name) is organised in most of the Universities named. It is impossible to give more than illustrations of this within the limits of this chapter.

At the University of Colorado bulletins are published on municipal subjects, and the faculty offer instruction on public health problems in co-operation with public officials.

The University of Indiana undertakes to give scientific replies to inquiries concerning food, sanitation, hygiene, the prevention and cure of diseases ; economic and social problems ; conservation of resources ; highways, and civic improvements of all sorts. Lecturers on civic subjects are sent out, and courses of instruction for city officials on municipal government are organised. Similar facilities are offered in the Iowa State College and at Kansas University.

The Clark University at Worcester, Massachusetts, has specialised in pedagogic psychology, and the researches into child welfare and the training of adolescents on psychological principles have, through the genius and encyclopædic knowledge of Dr. Stanley Hall, become of world-wide fame.

The Public Welfare work done by the University

of Cincinnati is remarkable. 'Every department and school of the University in that city,' says the Federal report, 'exists for the purpose of serving the people.' The department of social science keeps in close touch with the various charity organisations, and has instituted a general council of charities.

There is an anti-tuberculosis league which, under the supervision of the medical faculty of the University, serves in the hospitals and co-operates with the Health Board, the students doing much of the laboratory work. The department of psychology conducts a laboratory for the investigation of defective and backward children. The department of political science is in touch with the City Council, and has rooms in the City Hall, where the professors and graduates help in municipal work.

At the University of Wisconsin five bureaux have been organised in the welfare department :—

- (1) The Municipal Reference Bureau.
- (2) The Civic and Social Bureau.
- (3) The Health Instruction Bureau.
- (4) The Bureau of Community Service.
- (5) The Bureau of Visual Instruction.

It would be beyond the compass of this chapter to dwell on all these activities, but special attention may be drawn to the Civic and Social Bureau,

which devotes itself to developing the life of the community by making the school-houses social centres where the people can meet together to discuss common problems, and promote a community-conscience upon public questions, as well as a feeling of social unity.

This utilisation of school-houses during evening hours, it may be remarked, is common, and is rapidly developing through all the cities of the United States, great and small. Besides this important function, which alone might entitle it to admiration and imitation among European institutions and peoples of more advanced age but less advanced idealism, the University of Wisconsin issues weekly bulletins on infant mortality and baby-care, preventable diseases, insanity and contributory disease, and these bulletins are published in the newspapers.

Enough has now been said to show that the Universities of the United States do not regard their duty as done when, in the cloistered atmosphere of academic seclusion, they have educated a small minority of the State and the nation to a higher intelligence, but that they regard it as extending also to spreading the torch of illuminating knowledge among the people at large. Incidentally they enforce the truth, so slowly learnt among the peoples

of more ancient lineage, that the work of education is not finished with childhood and pubescence, but extends through the whole life of the individual and of the community. Various causes have stimulated the recognition of this truth ; first and foremost, perhaps, because, owing to the never-ceasing tide of immigration, the United States is less a single nation than a great crucible of divergent nationalities. These nationalities have to be assimilated as quickly as possible, for the welfare of the Federation, into one organic and harmonious whole. The recognition of the necessity of solving this colossal problem runs through all the stages of American education from childhood onwards, but it does not cease at that stage. It is carried on and developed through life. There are some indeed who hold that, because the character of the immigration has vastly changed during the last century and a quarter—because the Federation is receiving a preponderance no longer of Anglo-Saxon and Scandinavian elements (elements which easily crystallise themselves in the national crucible) but a horde of peoples drawn largely from Southern and Eastern Europe, not nearly so capable of assimilation—the country will find an increasing difficulty, and will face increasing dangers in carrying her national burden and fulfilling successfully her great destiny as the meeting-place of the nations.

Secondly, the continual struggle which has been the outcome of her phenomenal commercial and industrial expansion—perpetually outdistancing her educational, social, and political conceptions—is seen now to be pressing heavily on the organisation of her smaller communities and cities. And yet, on those communities and cities must depend ultimately the social and educational welfare of the whole country.

Nevertheless the energies which respond to the challenge to solve these instant and future problems are so forceful as to call forth the admiration and imitation of an older people, who, more fossilised in tradition, have been rudely awakened during the past four years to the truth that the whole world is out of joint.

CHAPTER XXI

REWARDS OF TEACHING

THERE was a general consensus of opinion among members of the Mosely Commission in 1903 that the munificence of rich benefactors had helped to provide educational institutions with buildings and equipment such as might naturally evoke the envy and admiration of the British visitor. On the other hand, there was an equally strong opinion that the payment and position of the instructors, particularly in the lower grades of the teaching profession, left a great deal to be desired. It was enthusiastically admitted that men who had amassed wealth by incessant toil and force of character had chosen the nobler part in realising that education, which they themselves in their own life struggle had often lacked, was nevertheless the one indispensable factor in human progress, and that, in bequeathing the fruits of their labour to the betterment of future generations, they were conferring on their country the most imperishable of all blessings. Nevertheless it was remarked that they had usually directed their educational gifts

towards the endowment of material rather than of men. It had been their pride to reflect that over the portals of palatial institutions would be inscribed the legend, 'Hoc fecit Johannes——' and that what they had found in wood or brick they had left in marble. But (said the critic of the time), there was very small evidence that these benefactors had visualised the spiritual side of education. With all their stupendous gifts and legacies, they seem to have bestowed little on the endowment and rewards of the teachers, without whose agency the marble was dead after all. The dry bones were there ; they had put abundant flesh on them, but they had sometimes failed to see that, without the informing spirit, the great hosts of education could neither stand nor advance.

Fourteen years have passed away, and the interesting, if not the most vital, question that the critic has to ask himself is this : assuming that this criticism was in 1903 urged, how and to what extent has it been met in 1917 ? Or, to put it in another form, how far has the teaching profession been made, by reason of the rewards offered, a profession which attracts, as the loftiness of its mission demands that it *should* attract, the most intellectually acute and spiritually disinterested men and women in the country ?

In the investigation of this subject, one factor

assumes a sinister prominence to a degree practically unknown in certain other countries more fossilised in their educational traditions and less open to educational aspirations. The incursion of politics into American education has been doubtless a retarding obstacle to the best interests of the teaching profession. 'Graft' is an ugly word, but truth compels its use in this connection. Men of undoubted ability and lofty ideals have been thwarted and supplanted (even when, and sometimes because, their administrative success has been conspicuous) by political considerations—that is to say, by semi-public factions and private enemies. Superintendents of education, supervisors and principals, men who in the Old World might be thought permanently secure in the tenure of their office, have often in America been overthrown. Happily, owing to the vast area of the United States, such men, condemned for no specific shortcomings, but ousted by manipulated voting power, have been able to shake off the dust of one city and to find a refuge in another.

It would be invidious to suggest in what part of the Federation this blot in the educational escutcheon is conspicuously noticeable, or even to mention those quarters from which it is as conspicuously absent. But that the trouble is a real one will be admitted by nearly all fair-minded Americans who

have the cause of education at heart. But here it should be emphasised that the proverb concerning stones and glass houses still holds good. 'Graft,' however sinister in its manifestations, carries with it, to some extent, its own remedy. By its very nature it is very easily discovered and uprooted, even if it crops up again from time to time with new men and new methods. There is a form of 'graft' in Great Britain, let it be remembered, which, under the guise of 'vested interests' and 'family influence,' is far more insidious and far more ruinous to national progress. Happily it is not generally exerted in educational spheres, except perhaps in appointments to one or two of the most fashionable academies, and in certain departments of the Civil Service connected with education. It is far more insidious, because, though ethically it is nothing but 'graft by inheritance,' and exerted under the subtle name of 'nepotism,' yet it cannot be brought before the bar of the public conscience. It is far more ruinous because, while appointment (or disappointment) by 'graft' in America involves a certain amount of ability in the grafter and the grafted, there is no such guarantee in England when promotion to posts of position and responsibility is secured through hereditary transmission.

I commend the further study of this subject, and

the translation of it into drastic future action, to clean-minded reformers of all types in State and Church alike.

But to resume. After extracting this thorn from the side of American education, the poison of which after all does not seriously eat into its vitals, for it is neither widely extended nor extending, what substantial rewards are now being offered to the teacher in the United States to tempt him or her to select the teaching profession as a life work? It must be borne in mind in this connection that commercial and industrial occupations offer a far wider field to the acute intellects of America than in some European countries.

The Superintendent of Education of a city of more than a quarter of a million inhabitants receives a stipend of anything from £800 to £2000 a year. A similar official in smaller cities gets an income of from £500 to £1250. The Principal of a High School in the larger cities receives from £400 to £1000; in the smaller cities from £350 to £800.

It must be noted here that no wide gap exists between the Principal and the assistant teacher, as in Great Britain. He is not an autocrat, but merely *primus inter pares*.

The salary of a High School teacher varies from £150 to £600, whether in the larger or the smaller

cities. The Principal of an Elementary School gets from £250 to £700 in most cities, and the assistant teacher from £60 or £70 to £200. There is no bar whatever, on the other hand (either social or academic) such as exists in England, to a teacher getting promotion from the Elementary to the High School; it is purely a matter of educational fitness.

It will be observed that no mention has hitherto been made of the salaries of the Professors and Teachers in Universities and University Colleges. Though some of these salaries are known to the writer, they have, for various reasons, been communicated in confidence. But the omission may perhaps be better understood when it is added that such figures are withheld as a matter of principle even from the knowledge of such august bodies as the Committee of the National Educational Associations. Suffice it to say that they are naturally higher than those secured in the lower ranks of the profession, and that the maximum salary of a President is £2400 a year, and the average salary £1250; of a Dean, £850 and £480; of a Professor, £1400 and £600 a year. These figures refer to such Universities only as have more than £200,000 a year endowment. The maximum and average stipends respectively in Universities with an annual endowment of less than £200,000 are:

of a President, £1600 and £850 ; of a Dean, £800 and £450, and of a Professor, £1200 and £300, respectively.

In the State-aided Universities, the maximum and average stipends run as follows :—

Presidents	Maximum	£2600	Average	£1050
Deans	„	£1000	„	£450
Professors	„	£800	„	£520

These figures are taken from 182 Universities and University Colleges, of which 66 are State-aided, 21 are private institutions with more than £200,000 endowment, and 95 private institutions with less than £200,000 endowment, and are confirmed by the figures published by the National Educational Association, with the co-operation of Dr. Claxton, Federal Commissioner of Education in the United States.

Before, however, a fair estimate can be made as to the attractiveness of the scholastic profession in the United States, it must be borne in mind that the cost of living there is at least 50 per cent. more than in the United Kingdom, while, for the purpose of this chapter, the figures representing the salaries of University and College teachers must be left out of sight, since, though there is a complete teaching 'ladder' from the Elementary to the High School, there is no corresponding ease in passing from the High School stage to that of the University or

College. The qualifications are, in fact, widely different.

To summarise then all these factors—it must be admitted that, in the scholastic profession in America, though its attractiveness as regards the tangible rewards of teaching has been greatly enhanced since 1903, these rewards do not seem to be of a nature to attract men and women fitted with exceptional gifts of intellect and force of character—except in the not inconsiderable number of cases where the teacher is induced to enter the profession by the sheer love of teaching. The general result has been, and still is, that there is an undue prominence, and indeed predominance, of women teachers even in the High Schools. In spite of the power of exceptional women over adolescents from fourteen to eighteen, the experience of the history of all races, civilised and uncivilised, insists on a partial (but not complete) segregation of the young male from female influence at and after the age of puberty. The system of teaching and methods of approaching educational subjects on the part of all but those exceptional women is too apt to be of a quasi-sentimental and slightly unbalanced character, and this is bound to have, and is seen to have had, a re-active influence on the mind of plastic youth. The only remedy for this weakness must surely be an organised attempt on the part of the

authorities of States and cities throughout the Federation, to make the teaching profession a real career by bestowing greater rewards and greater security of position on those who would be thereby tempted to make it their life-work, At present strong evidence, negative as well as positive, is forthcoming to show that many who are predisposed, by character and love of the young, to enter the teaching profession are deterred by the lack of substantial reward and finality.

Moreover, it may be added, that the lack of discipline and self-controlling impulses, observable among some American youths, would be minimised, if not altogether cured, by the gentle application of the mailed fist beneath the velvet glove, and 'this is a consummation' which, for the ultimate good of the nation, 'is devoutly to be wished.'

CHAPTER XXII

SCIENCE AND MANUFACTURE—I

THAT the manufacturer in the United States has outstripped all other producers in the perfection of mechanical processes and in the speed of output is a claim which can provoke no serious dispute. By the versatility of his methods, by the financial audacity which bids him fling out-of-date machinery on the scrap-heap, by the standardisation of parts in mechanical construction, and by the rapidity of assemblage of these parts, he stands without a rival as a pioneer in the conversion of the world's natural resources to the wants of man.

It is unnecessary to labour the causes which have achieved this result. The American has had in his operations access to a vast geographical area, enormously rich in agricultural and mineral products. Moreover he has been encompassed by an electric atmosphere, which reacts forcefully on his nervous energy. He has even turned initial disadvantages to his own ultimate profit and well-being. The constant shortage of labour has impelled him to the multiplication of horse-power,

and to the invention of countless devices in mechanical development. But in measuring his achievements the observer is confronted by certain factors which, though they have hitherto contributed to his success, at the same time suggest its limitations.

First of all, the visitor to the great manufacturing concerns in the East and Middle West can hardly fail to note that office management has been, with many firms, more conspicuous among the elements of success than true manufacturing functions. Manufacturing efficiency consists in producing the best article at the cheapest price. The art of money-making, on the other hand, consists in selling the cheapest article at the best price. In not a few American concerns, money-making has taken the first place—manufacturing efficiency the second. Various causes have contributed to this unnatural subordination.

Again, exploitation by advertisement on a colossal scale, working hand in hand with adulteration of products, has produced malign results on manufacturing operations.

This condition of things, however, which has been insidiously but seriously impairing the efficiency of American industry in certain quarters, has long been recognised by public thought, and has, more tardily, moved Federal and State Governments to legislative action.

But—more than all—the revelations brought to light by the war have awakened the public and the manufacturer alike to the necessity for a new order of things.

Germany has taught America that industrial efficiency does not depend on the perfection of mechanical devices alone, but on the application of science to those devices, and that, though she has been responsive, while Great Britain has been comparatively blind, to the dynamic power of modern manufacturing processes, yet, owing chiefly to her boundless natural resources, she has been grossly careless in husbanding those resources, and has often shown herself as ignorant as Great Britain of scientific processes for the elimination of waste and the utilisation of by-products.

With her usual alertness, however, in facing new conditions, America is now fully alive to the fact that, through the devastations of war, the world will, for many years, remain very poor, and she is discovering that science alone can mitigate that impoverishment.

She is now just beginning to apply scientific skill to industry on a large scale. That she has not done so before is due partly to the attitude adopted towards industry by the professors of science themselves. That attitude of mind is curiously similar

to that which has obtained till lately in Great Britain. The Academic Scientist thought and taught that Science should be served primarily for her own sake, and that her employment in industrial undertakings and for material advantages to her students was a degradation. The interests of the manufacturer were avoided, because it was commonly supposed that his life-aim was centred in the accumulation of money. The true psychology of man in the process of achieving his material ends was misinterpreted. It was not realised that he is by nature a creator, in the same sense as the agriculturist is a creator, and that his sub-conscious as distinct from his conscious aim is towards the expression of his most efficient powers, rather than towards the accumulation of personal profits.¹ A stern line has hitherto been drawn between 'pure' science on the one hand, and 'applied' science on the other; nor has it been hitherto sufficiently realised in the Universities and Colleges of America that the conclusions of 'scientific' science in one generation become the industrial dynamics of the next, and that a scientist who spends his time and talents in pursuing a line of knowledge for its own sake without giving its results to the world, is committing a crime against humanity—a crime as heinous as that of those in days of old who

¹ See *Eclipse or Empire?* by Gray and Turner, pp. 70-84.

possessed the key of knowledge and refused to unlock to others desirous of entering in.

On the other hand, the manufacturer, brought up on the traditional methods imported from Great Britain centuries ago, had not until some little time after the beginning of the present century any serious realisation of the necessity of science for industrial progress, while for the most part he despised and avoided the pure scientist as an academic dreamer.

The present war, and the lessons which German scientific efficiency had forced on the world's attention, have not been lost on the alert genius of America. It would not be true, however, to say that they have originated a conversion of American thought: they have only imparted additional stimulus to those educational and industrial movements towards greater efficiency in the work of life, which have been fermenting during the last ten years. For the whole of this decade, in spite of certain assertions as to the working of a reactionary tendency, the whole educational system of the United States has been tested in the crucible of efficiency, and a series of interesting and sometimes brilliant experiments has been taking place throughout the country which have gradually displaced traditional systems, where they have been found lacking as a preparation for life, and

have substituted a more scientific and at the same time a more vocational training. This movement is still in its childhood, if not in its infancy, but is growing with extraordinary rapidity. In the succeeding chapters it is proposed to outline some actual instances of this movement in the United States with special reference to the closer connection between the schools and colleges, the scientists and the manufacturers, which have been visibly marked since 1906, as well as to refer generally to some intended movements of which the writer has been privileged to hear from various authorities in his progress through the States. For reasons, however, which may be understood, it is undesirable to give the names of those authorities and States.

CHAPTER XXIII

SCIENCE AND MANUFACTURE—II

IT must be premised that there are still no settled co-ordinating relations between the factories and the universities such as obtain in Germany. Owing to the defects in the educational system under which he was trained before the opening of the present century, the American manufacturer of middle age is not as a rule equipped with a knowledge of how to conduct factory research. A large majority of firms have indeed no touch with scientific research at all, while statistics as to those which possess such touch have, for various reasons, been difficult to obtain. The untiring efforts, however, of the late Professor R. K. Duncan, of the Universities of Pittsburg and Kansas, have provided 'A list of some seventy-five corporations possessing either bureaux of research or individual research chemists.'

From an analysis of the practices in vogue in these concerns, it would appear that there has been great hesitation in attracting such research chemists from the technical institutes and universities to

permanent employment in the firms. The manufacturer has appeared suspicious of the persons employed getting to know too much of the inner processes and operations of the firm. Some real justification also exists for the doubt, which is entertained in some quarters, whether the University or Institute, which has been asked to choose a man for the job, has been guided by any real knowledge as to the kind of man required. Too much stress appears to have been laid on mere academic qualities, and too little regard paid to the question whether the man chosen is equally fitted to deal tactfully with the managers of the concern to which he was being sent. Hence chemists, as a rule, have been hired by the week or month: there has been no fixity of tenure. Moreover, no system prevails for advancing the salaries of the consulting chemists, such as obtains among the ordinary officials of the firm. Thirdly, the manufacturer, through ignorance of scientific requirements, has often failed to provide such necessities as an adequate laboratory and library on the spot.

There has been a corresponding vagueness in fixing the exact relation between the chemist, the managers, and the foremen, which adds to the complexity of the situation. The insecurity of tenure, of course, accentuates this difficulty. Friction and dismissal have often been the result of these unde-

cided relations, and many firms have, in consequence of individual failures, permanently withdrawn from the plan of employing scientific experts for the future.

On the other hand, those in command of the scientific side of a University or Technical Institute have often shown themselves (as has been previously hinted) without practical experience of the wants of the manufacturing concern. This hampers the power of choice among students. The elector, often a 'pure' scientist, up in the clouds, is difficult to call down to the practical consideration of sublunary affairs.

Professor Duncan, in an address delivered before the New York section of the American Chemical Society in 1911, insists on the following 'points' in the selection of candidates :—

1. Scholarship ;
2. Creative power ;
3. Masculine qualities, *i.e.* a firmness in dealing with foremen and workmen ;
4. Personal qualities, *i.e.* tact in his relation with officials ;
5. Personal integrity ;
6. Practicality ;
7. Health ;

whereas, as Professor Duncan pregnantly remarks,

‘the professor of chemistry has too often nominated his man on the basis of scholarship alone.’

There is another point which might escape the notice of the man in the street, and which leads to serious difficulties. The practical man of business, himself only partially trained, has an imperfect idea of the financial value of ideas, which are the product of highly finished education. ‘Ideas do not count,’ and therefore are not treated as counters to be expressed in terms of dollars and cents. Because professors are lovers of knowledge for its own sake, it is supposed that they are and should be willing to give the benefit of their ideas for little or nothing. This is a failing not uncommon even among enlightened men of business—and with it goes the incapacity to distinguish between the man of ideas who has the will-power to make those ideas germinate into fruitfulness and the mere academic student, whose ‘pure intellect moves nothing.’

For all these reasons, the relations between the universities and colleges on the one hand, and the manufacturing interests on the other, though they have become closer every year, still remain in a disturbed and chaotic condition in most of the States of the Union. These relations require to be systematised in some manner, either with or without the aid of State legislation.

This regularisation has been partially achieved with very great success in the State of Wisconsin, where the University has interpenetrated (if the phrase may be allowed) the State organism to an extent without parallel within the bounds of the Federation. It would be beyond the scope of this chapter to touch on the immense powers the University has gradually appropriated by its bureaux of Legislative Reference, by the employment of its engineering members in such activities as the Railway Commission of the State, by the utilisation of its hygienic laboratories for State purposes, and by the researches of its Agricultural Department. Though the relations of its Chemical Department, as affecting manufacturing interests, are still in the initial stage of development, there is no doubt that much that has already been achieved has materially assisted the marvellous industrial development of the State.

The various Technical Institutes in the different States are doing as magnificent work in the field of chemistry as in the fields of physics and engineering in all its branches. Some of these Institutes, and notably the Massachusetts Institute of Technology, with its unrivalled material equipment and a professional staff second to none in the country, send out their students into the world fitted to grapple with every problem that can possibly

confront the manufacturing world, but the social machinery which should bring into touch the mutual interests of the Factories and the Institutes is often disjointed, and in some States non-existent.

CHAPTER XXIV

SCIENCE AND MANUFACTURE—III

ANY review of the educational relations between Science and Manufacture would be incomplete, and indeed misleading, if it failed to refer to the system of Industrial Fellowships which, in the Universities of Kansas and Pittsburg, form a brilliant exception to the foregoing criticisms.

Ten years ago the authorities of the former University, led by Professor Duncan, realised that, notwithstanding the tariff, the whole country was threatened with the invasion of articles of foreign manufacture, chiefly 'made in Germany,' while the raw materials of the native soil were kept in bond by a set of men who only released them to the manufacturers after extortionate bargaining. At the same time the manufacture of native-grown goods had been carried on on a scale of gross extravagance, in defiance of all those scientific conditions which lead to the elimination of waste. It was gradually brought home to the mind of those who knew that the only way to 'stop the rot' was a

scheme by which co-ordination between the seats of scientific learning and of the industries could be brought about. These considerations led to the establishment of Industrial Fellowships, first in the University of Kansas and afterwards in that of Pittsburg.

Briefly, the scheme took the following form. The various firms who were invited to co-operate agreed to appoint a Fellow to be chosen by the University for two years, whose salary was fixed at sums ranging from \$500 to \$10,000 per annum, together with a proportion varying from 5 per cent. to 10 per cent. of the net profits arising from the results to the firm of the particular problems requiring scientific solution, on which the Fellow was to concentrate his expert advice. It was further agreed that secrecy as to the *modus operandi* was to be guaranteed to the employing firm for three years after the termination of the agreement, during which the Fellow bound himself to give his services to the said firm; after which period, *i.e.* five years in all, the results of his investigations were to be revealed for the benefit of the world at large.

The labours of these Research Students have spread over an extraordinarily wide field. Fellowships have been established at the University of Kansas for the pursuit of such varied investiga-

tions as the Chemistry of Laundering, the Study of Disease, the Chemistry of Bread, the utilisation of the Constituents of Buttermilk, the Constituents of Crude Petroleum, the development of Enamel-lined Steel Tanks, the relation between the Physical Properties of Glass and its Chemical Constituents, the Chemistry of Cement and Lime, the Chemical Treatment of Wood, the Chemistry of Vegetable Ivory, the Chemistry of Baking, problems concerning the nature of Glue, and the production of utilisable substances from Natural Gas.

This system of Industrial Fellowships took root at a later period at the University of Pittsburg, and with even more conspicuous success. Dr. R. P. Duncan was invited in 1911 to initiate there what he had developed at Kansas. The work began in a temporary building, but two years later (1913), two brothers named Mellon, struck with the practical value of the scheme, presented a sum of \$500,000 for its establishment on a permanent basis. More than three-fifths of that sum was expended on the erection of the 'Mellon Research Institute and School of Specific Industries,' which now forms part of the University of Pittsburg.

This Institute contracts with manufacturers for the solution of industrial problems, on the understanding that the firm interested undertakes to

endow an Industrial Fellowship for one year at least. The advantages of such an agreement are obvious.

The firm obtains without cost the advantages of a first-class laboratory and equipment and library facilities. The holder of the Industrial Fellowship works under the direction of his more learned seniors, who have been experts in the solution of research problems. Lastly, the University demands from the Industrial Fellow three hours of work a week, to be spent in teaching its own junior students. Thus, in a general sense, it is carrying out one of the main designs of the University, viz., 'to illuminate the world with the torch of knowledge over the widest possible area.'

After ten years of experiment abundant evidence is at hand to prove that in almost every instance these schemes have not only produced remarkably successful results in increasing the profits of the firms which provided funds for the Fellowships, but have reacted most beneficially on the status of the Fellows who have been chosen for employment, as well as on the Universities themselves. This last result must in the future prove the most valuable and far-reaching of all. It has shaken the University free from the old semi-monastic superstition that scientific knowledge is to be

hugged 'purely for knowledge sake' within academic walls: it has shown that no University is doing its whole duty to mankind unless it disseminates its knowledge for the utilisation of the world's resources and for the benefit of the world at large.

Happily, there is accumulating evidence throughout the length and breadth of the United States that the Universities have become fully awakened to a wider conception of their functions in this respect, and with the alertness characteristic of American genius are following closely on the example set by the two above-named Universities of the East and Middle West. Confidential information, which at present he is not in a position to specify, has been put into the possession of the writer which makes it clear to him at least that a great light is shining on the future of scientific American industries.

But the war, which has revealed the stupendous activities of Germany in the utilisation of scientific knowledge, and in co-ordinating the result of that knowledge between academic and industrial interests, has done more than anything else to intensify the sense of the necessity of overtaking and beating Germany in a region in which, by universal confession, she has hitherto far outstripped other civilised peoples.

It may be confidently predicted when America once sets her mind and hands to a task, she will achieve her end with an efficiency and despatch which is often the envy and sometimes the despair of nations of older growth.

UNIVERSITY OF CALIFORNIA LIBRARY

Los Angeles

This book is DUE on the last date stamped below.

JAN 16 1959

MAR 22 1966

SUBJECT TO FINE IF NOT RETURNED TO

EDUCATION LIBRARY

QUARTER LOAN

JUN 23 1976

RECEIVED

APR 28 1976

EDU./PSYCH.
LIBRARY.

UCLA-ED/PSYCH Library

LA 210 G79a



L 005 601 423 6

Education
Library

LA
210
G79a

UC SOUTHERN REGIONAL LIBRARY FACILITY



A 000 955 547

